

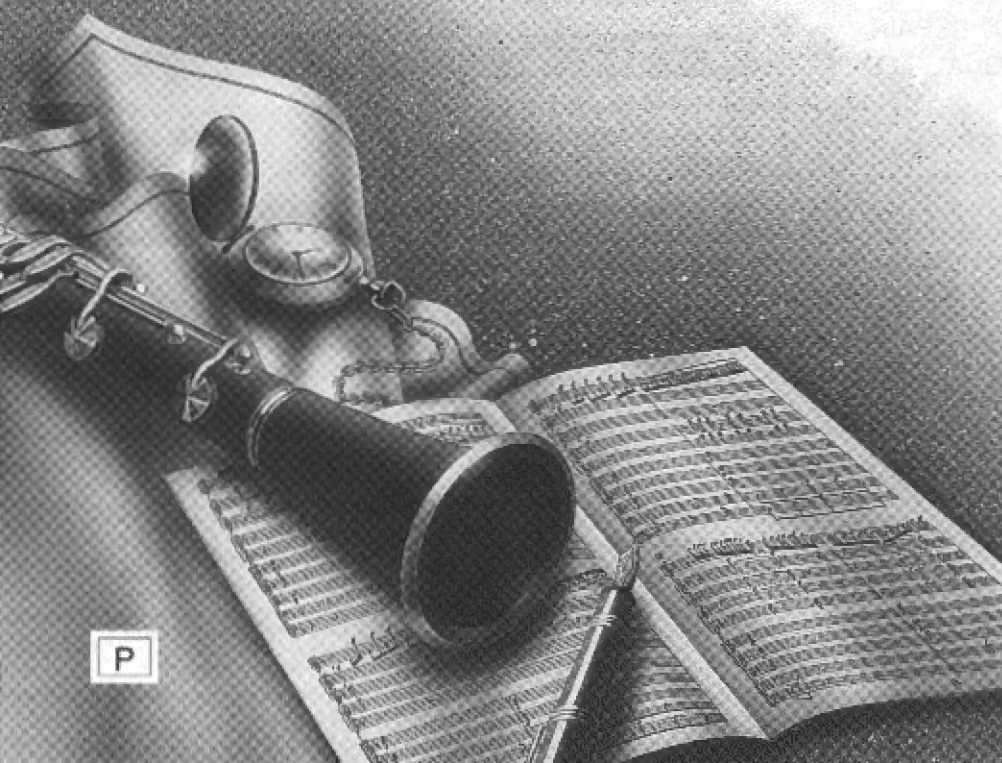
Hi-Fi Component System **SD-S9225 · S7225**

Operating Instructions



COMPACT
disc
DIGITAL AUDIO

This manual explains the audio components of the above system.



Technics®

Before connecting, operating or adjusting these components, please read these instructions completely.
Please save this manual.

Dear Customer

Thank you for purchasing this product.

For optimum performance and safety, please read these instructions carefully.

The model number and serial number of this product can be found on either the back or the bottom of the unit. Please note them in the space provided below and keep for future reference.

MODEL NUMBER	SERIAL NUMBER
Receiver : SA-G78	
Graphic equalizer : SH-GE50	
Cassette deck : RS-TR180	
CD changer : SL-MC59	

User memo:

DATE OF PURCHASE _____
DEALER NAME _____
DEALER ADDRESS _____
TELEPHONE NUMBER _____

CAUTION! (For SL-MC59)

THIS PRODUCT UTILIZES A LASER.
USE OF CONTROLS OR ADJUSTMENTS OR
PERFORMANCE OF PROCEDURES OTHER
THAN THOSE SPECIFIED HEREIN MAY RESULT
IN HAZARDOUS RADIATION EXPOSURE.
DO NOT OPEN COVERS AND DO NOT REPAIR
YOURSELF. REFER SERVICING TO QUALIFIED
PERSONNEL.

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Reference

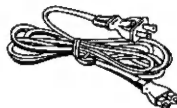
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Supplied accessories



Please check and identify the supplied accessories

- ☐ AC power supply cords
(long type) (RJA0065-A)1 pc.
(short type) (RJA0066-A)3 pcs.



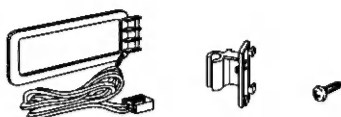
- ☐ Stereo connection cables
(RJL2P004B08A)5 pcs.



- ☐ FM indoor antenna
(RSA0006)1 pc.



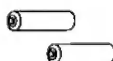
- ☐ AM loop antenna set (RSA0010)
AM loop antenna1 pc.
AM loop antenna holder1 pc.
Screw1 pc.



- ☐ Remote control transmitter
(EUR646498)1 pc.



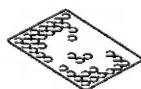
- ☐ Batteries2 pcs.



- ☐ Notebook-like binder [Liner notes organizer]
(RFA0622-K1)1 pc.



- ☐ Numbered stickers sheet
(RQLA0321)1 pc.



Use numbers indicated in parentheses when asking for replacement parts.

To order accessories contact 1-800-332-5368 or web site
(<http://www.panasonic.com>).

CAUTION:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Notice: This system complies with new Part 15, except for the radio receiver, which complies with old Part 15, Subpart C of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesirable operation. The radio receiver is not subject to above item (2).

Any unauthorized changes or modifications to this equipment would void the user's authority to operate this device.

WARNING:

TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK OR PRODUCT DAMAGE, DO NOT EXPOSE THIS APPLIANCE TO RAIN, SPLASHING, DRIPPING OR MOISTURE.



CAUTION

**RISK OF ELECTRIC SHOCK
DO NOT OPEN**



CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE SCREWS. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Before use

Precautions

Before using this unit please read these operating instructions carefully. Take special care to follow the warnings indicated on the unit itself as well as the safety suggestions listed below. Afterwards keep them handy for future reference.

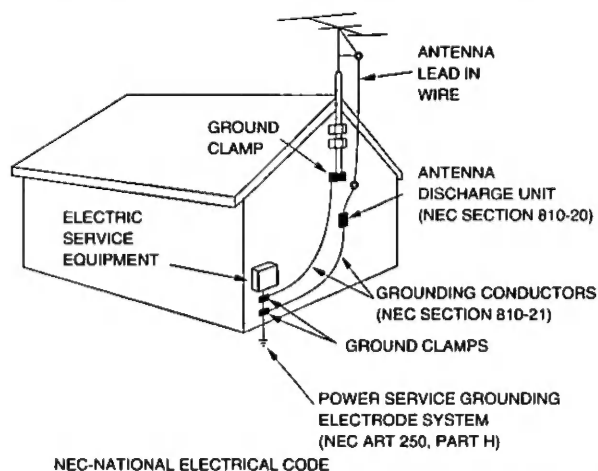
Safety

1. **Power Source** -- The unit should be connected to power supply only of the type described in the operating instructions or as marked on the unit.
2. **Polarization** -- If the unit is equipped with a polarized AC power plug (a plug having one blade wider than the other), that plug will fit into the AC outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.
3. **Power Cord Protection** -- AC power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them. Never take hold of the plug or cord if your hand is wet, and always grasp the plug body when connecting or disconnecting it.
4. **Nonuse Periods** -- When the unit is not used, turn the power off. When left unused for a long period of time, the unit should be unplugged from the household AC outlet.

Installation

Environment

1. **Outdoor Antenna Grounding** -- If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70-1990, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See figure below.



2. **Water and Moisture** -- Do not use this unit near water-for example, near a bathtub, washbowl, swimming pool, or the like. Damp basements should also be avoided.
3. **Heat** -- The unit should be situated away from heat sources such as radiators and the like. It also should not be placed in temperatures less than 5°C (41°F) or greater than 35°C (95°F).

4. **Condensation** -- Moisture may form on the lens in the following conditions...

- immediately after a heater has been turned on.
- in a steamy or very humid room.
- when the unit is suddenly moved from a cold environment to a warm one.

If moisture forms inside this unit, it may not operate properly.

To correct this problem, turn on the power and wait about one hour for the moisture to evaporate.

Placement

1. **Ventilation** -- The unit should be situated so that its location or position does not interfere with its proper ventilation. Allow 10 cm (4") clearance from the rear of the unit.
2. **Foreign Material** -- Care should be taken so that objects do not fall into and liquids are not spilled into the unit. Do not subject this unit to excessive smoke, dust, mechanical vibration, or shock.
3. **Magnetism** -- The unit should be situated away from equipment or devices that generate strong magnetic fields.
4. **Stacking** -- Do not place heavy objects, other than system components, on top of the unit.
5. **Surface** -- Place the unit on a flat, level surface.
6. **Carts and Stands** -- The unit should be used only with a cart or stand that is recommended by the manufacturer. The unit and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the unit and cart combination to overturn.
7. **Wall or Ceiling Mounting** -- The unit should not be mounted to a wall or ceiling, unless specified in this operating instructions.



Maintenance (See page 54 for details.)

Clean the cabinet, panel and controls with a soft cloth lightly moistened with mild detergent solution.

Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzene.

Service

1. **Damage Requiring Service** -- The unit should be serviced by qualified service personnel when:
 - (a) The AC power supply cord or the plug has been damaged; or
 - (b) Objects have fallen or liquid has been spilled into the unit; or
 - (c) The unit has been exposed to rain; or
 - (d) The unit does not appear to operate normally or exhibits a marked change in performance; or
 - (e) The unit has been dropped, or the enclosure damaged.
2. **Servicing** -- The user should not attempt to service the unit beyond that described in the operating instructions. All other servicing should be referred to authorized service personnel.

For the address of an authorized servicenter:
In the U.S.A. 1-800-211-7262 or web site
(<http://www.panasonic.com>)
In Canada 905-624-5505 or web site
(www.panasonic.ca)

You are able to enjoy these two surround systems with this receiver.

Surround system

Features

Software

Dolby Pro Logic

Dolby Pro Logic is a decoding system that was developed to get a better sense of presence from sources encoded with Dolby Surround. The feeling of position has been improved by the addition of a separate center speaker channel. Dolby Surround was developed to allow enjoyment of Dolby Stereo, a cinema system, in private homes. This system reproduces sound close to that of the original movie through use of an analog matrix.

This unit has two types of Dolby Pro Logic.

- **SURROUND:** the surround speakers are used.
 - **3 STEREO:** the surround speakers are not used.
- (⇒ Page 40.)

- Video tapes
- Laser discs
- DVDs
- CDs

Software encoded with Dolby Surround can be identified with this mark.

SFC (Sound Field Control)

SFC allows you to add surround-like effects to sources not formatted with Dolby Surround, Dolby Digital, or DTS. Various effects, like a concert hall or jazz club, can be achieved by introducing width or reverberation to the original sound.

(⇒ Page 43.)

Any kind, but particularly music CDs and video tapes.



Other surround systems

The following systems require special decoders. To enjoy them connect units with the decoders. The playback equipment itself may contain the decoder or you may need to obtain a digital surround processor, such as a Technics SH-AC500D.

Dolby Digital (AC-3)

Dolby Digital is a discrete 6 (5.1) channel digital surround system developed for cinema use. The sound signals in Dolby Digital format are compressed to 1/12 their original size, allowing an entire movie to be recorded on a single DVD. Not all Dolby Digital sources are recorded with 6 channels. Some sources marked Dolby Digital may be recorded in Dolby Surround, a 2 channel system.

(⇒ Page 45.)

- DVDs

Software encoded with Dolby Digital can be identified with this mark.



DTS

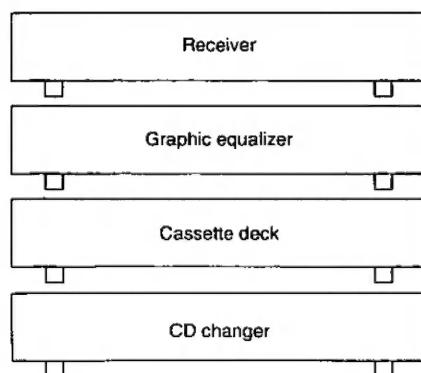
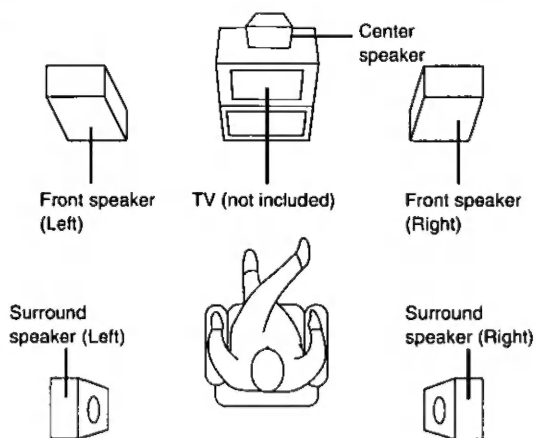
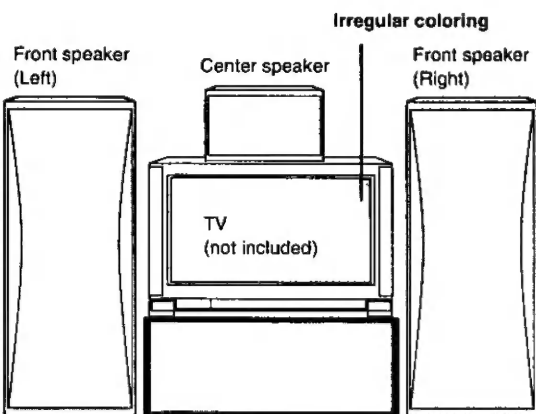
DTS is a discrete 6 (5.1) channel digital surround system developed for cinema use. Sources encoded in DTS are only compressed to a quarter of the size of the original to preserve sound quality. DTS sources are produced with the intention that all speaker channels will be used.

(⇒ Page 45.)

- DVDs
- Laser discs
- CDs

Software encoded with DTS can be identified with this mark.



A**B****C**

Placement

Placement of each unit **A**

Stack the units as shown in the illustration.

Placement of speakers **B**

The illustration shows where to place the speakers so as to best enjoy sound with Dolby Pro Logic systems and SFC function.

We recommend that surround speakers be placed on the side of or slightly behind the listener, and about one meter higher than ear level.

However the position should be adjusted to your personal preference, because the effect varies to some degree depending upon the source.

The sound reproduced by a speaker is easily influenced by such factors as room acoustics and the system's location in the room. Before finally deciding where the speakers are to be placed, please read the following information carefully.

- The bass sound will be increased if the speakers are placed on the floor or close to a wall due to reverberation. It is therefore possible to adjust the bass sound to some extent by adjusting the speaker's distance from the wall and/or floor.
- Undesirable resonance or reverberation will occur if the speakers face a hard wall or window. Curtains or similar materials can be used to prevent this.
- Keep the speakers away from sources of heat, high humidity and direct sunlight.

If irregular coloring occurs on your television **C**

These speakers are designed to be used close to a television, but the picture may be affected with some televisions and set-up combinations.

If this occurs, turn the television off for about 30 minutes.

The television's demagnetizing function should correct the problem. If it persists, move the speakers further away from the television.

Cautions on moving the CD changer

Before moving the changer to another location, be sure to remove all discs from the slots and turn off the changer.

Failure to do so will expose the compact discs and the changer to the risk of severe damage.

CAUTION

The changer mechanism automatically locks when power is turned off, to protect it against damage in transport.

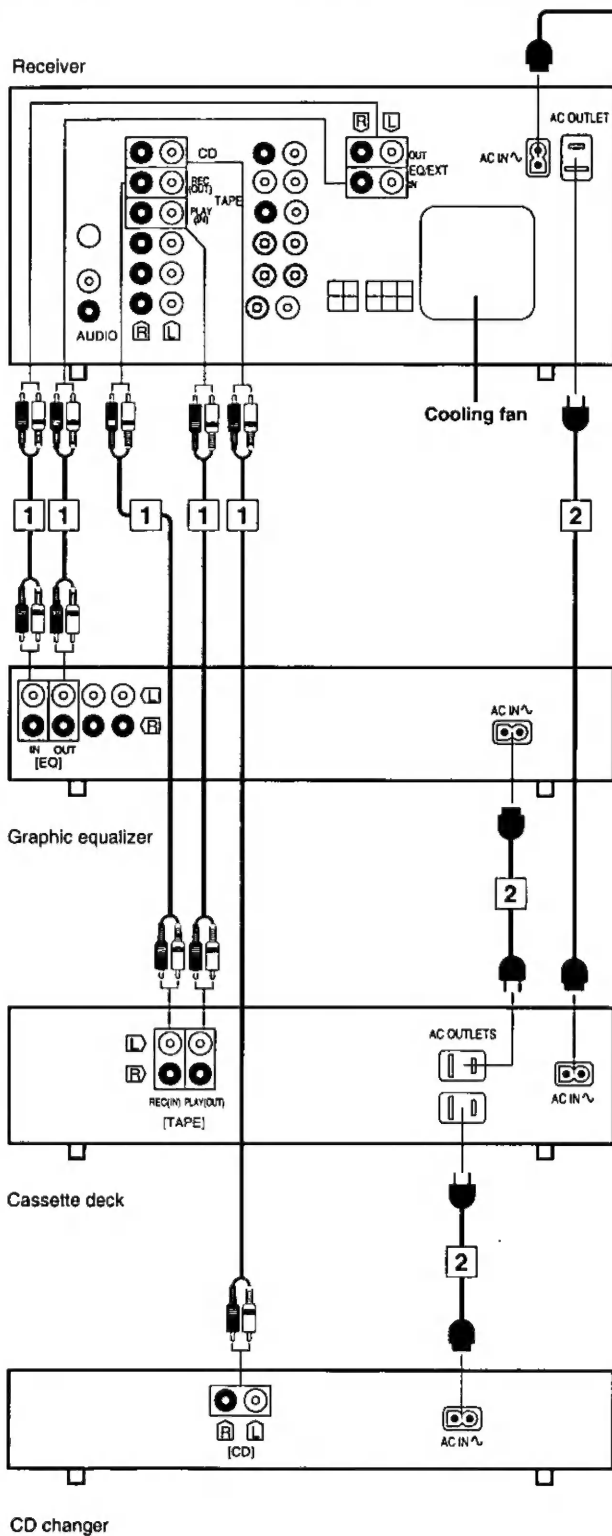
Therefore, always press [POWER] and make sure "OFF" appears on the display before you unplug the changer.

Other cautions

Outside light or noise may sometimes cause the changer to detect a disc when there isn't one. However, the changer always correctly detects the disc when in the play mode no matter what.

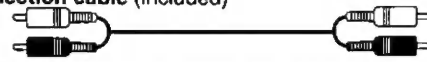
Do not leave the front panel open. Dust or other matter getting into the changer may lead to damage or malfunctions.

Connecting system components



Stereo connection cable (included)

White (L)
Red (R)



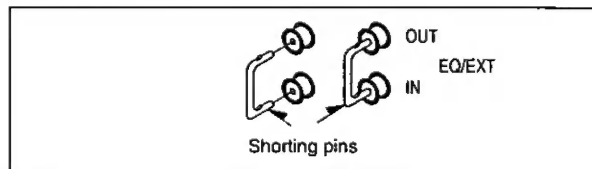
Make connections to each component with the included cords and cables.

1 Connect the stereo connection cables (5 pcs.).

"EQ/EXT" terminals of the receiver

Remove the shorting pins before use.

When these terminals are not in use, be sure to insert the shorting pins.



2 Connect the AC power supply cords (short type) (3 pcs.).

3 Connect the AC power supply cord (long type) (1 pc.).

AC outlets of each unit

Do not connect video equipment (such as a TV, etc.) to these outlets. (These outlets are intended for audio equipment.)
Do not exceed the indicated power ratings when connecting to these outlets.

"SWITCHED" outlet

Power is controlled by the power switch.

"UNSWITCHED" outlet

Power is always available, regardless of power switch.

Concerning the cooling fan

The cooling fan operates only at high output power levels.



Connect this cord after
all other cables and
cords are connected.



Household AC outlet
(AC 120 V/60 Hz)

Equipment connections

Stereo connection cable (not included)

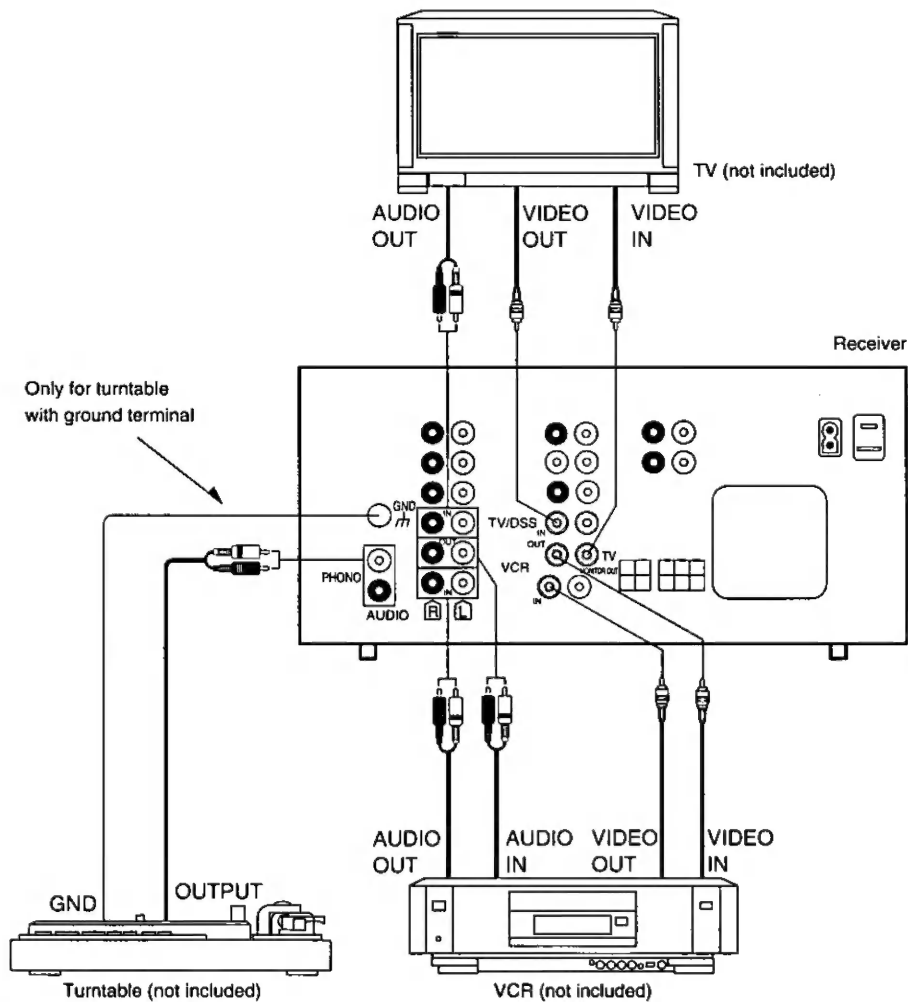
White (L) 
Red (R) 

Video connection cable (not included)

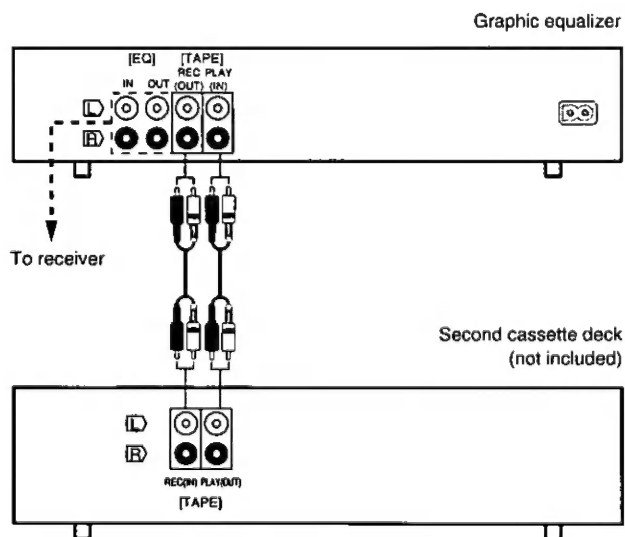


For details, refer to the instruction manual of the unit to be connected.

Connecting a turntable, VCR and TV



Connecting a second cassette deck



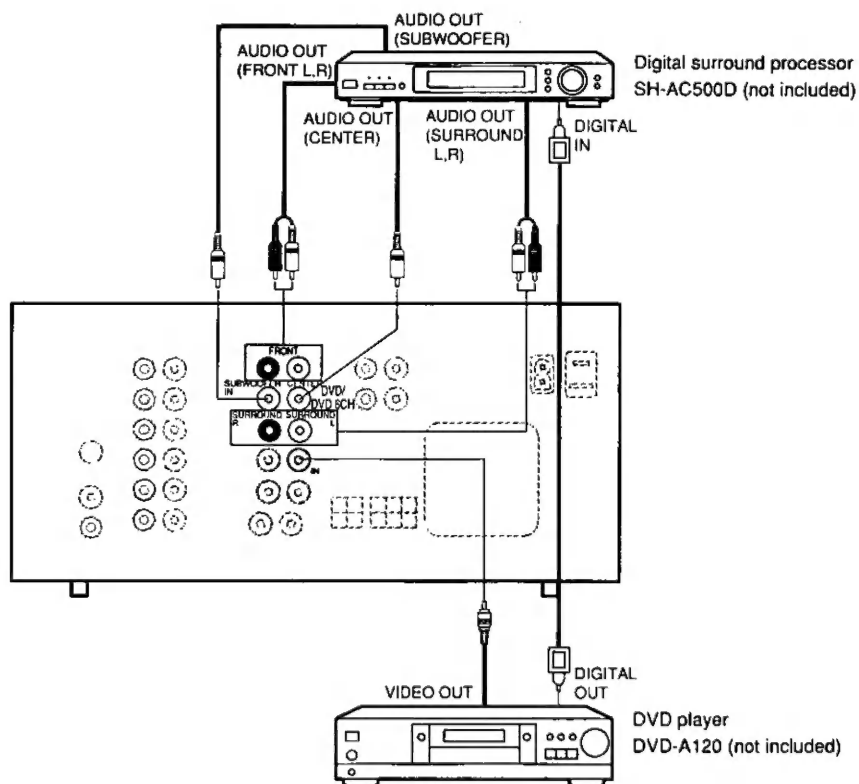
Monaural connection cable (not included)



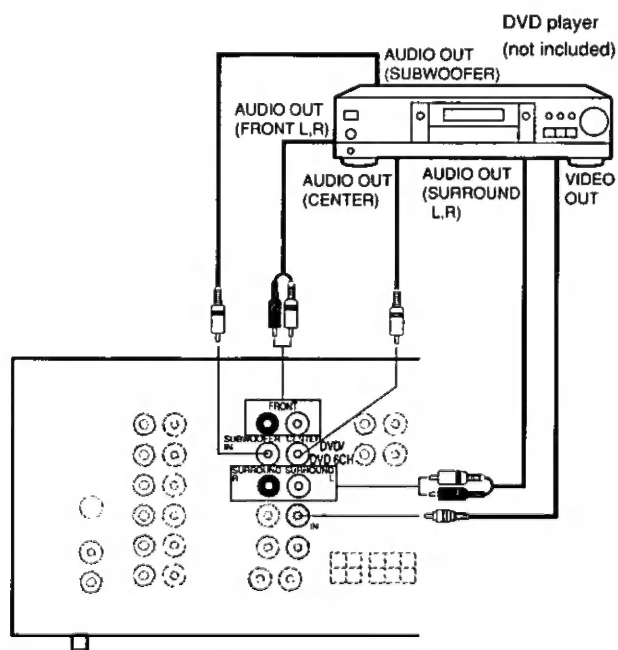
Optical fiber cable (not included)



Connecting a DVD player

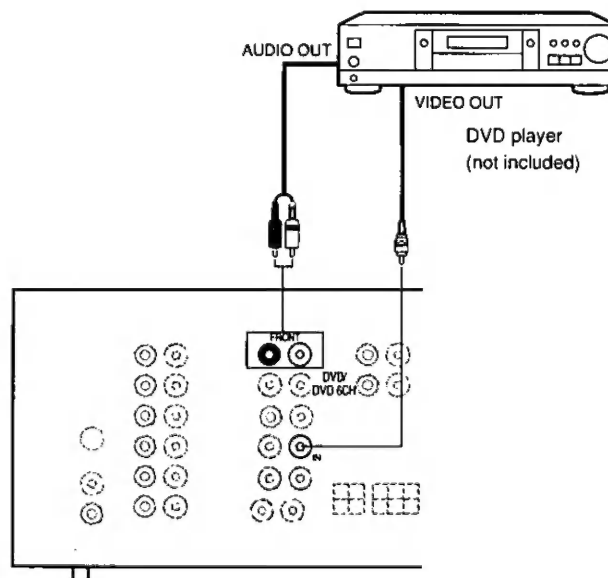


If your DVD player has surround decoders

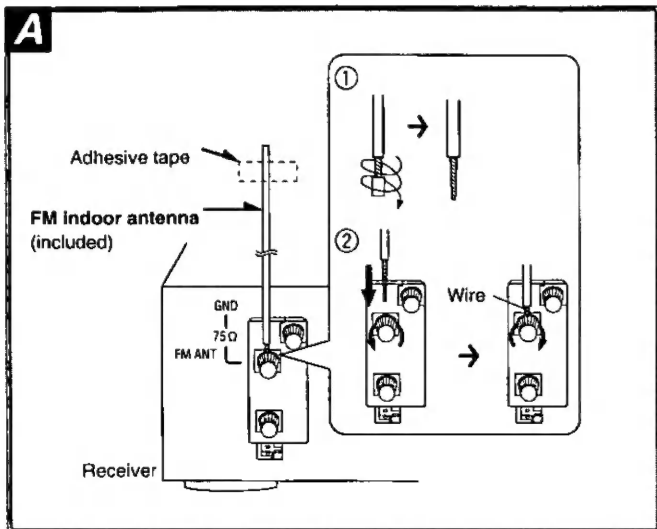


Stereo connection

Use this connection if none of your equipment has a surround decoder.



Antenna connections



FM indoor antenna (included) **A**

Attach to a wall (using tape) facing in the direction of best reception.

For best reception:

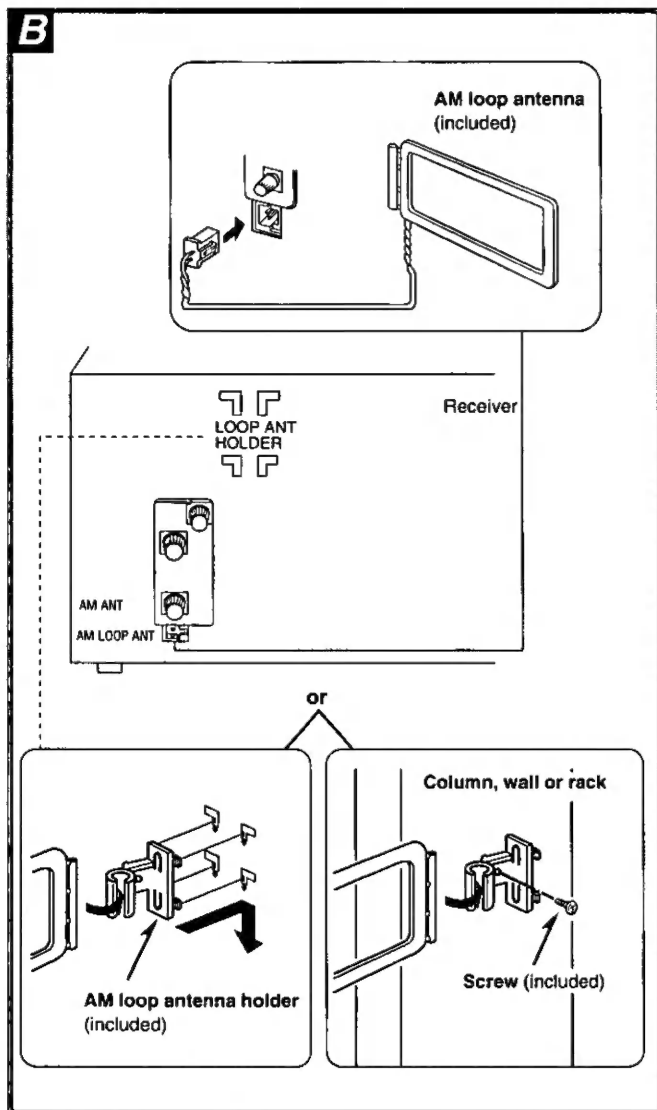
An FM outdoor antenna is recommended.

AM loop antenna (included) **B**

Install the AM loop antenna holder (included) to a column, wall or rack, or the rear panel of this receiver and then attach the AM loop antenna to the AM loop antenna holder (facing in the direction of best reception).

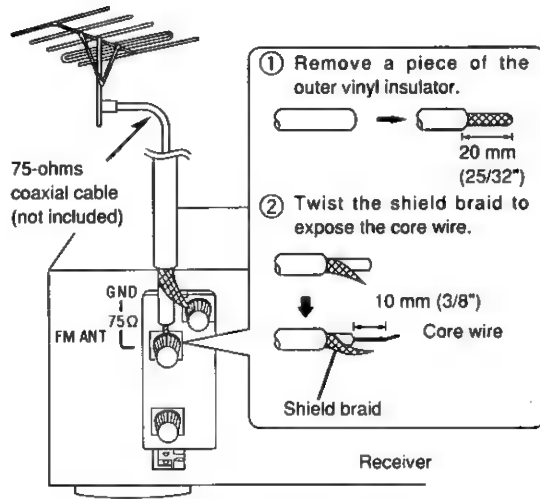
Pay attention to the following points when mounting the antenna.

- Mount the antenna so that the hinge is vertical.
- Do not mount it close to power supply cords, speaker wires or metal surfaces (doing so will result in noise).
- Do not mount it close to a cassette deck. When the cassette deck is being used, chirping or beeping sounds may result.



A

FM outdoor antenna
(not included)



Outdoor antenna

The outdoor antenna should be used when using the system in mountainous areas or in spaces enclosed by reinforced concrete where the FM indoor antenna (included) and/or the AM loop antenna (included) do not provide satisfactory reception.

FM outdoor antenna (not included) **A**

Disconnect the FM indoor antenna if an outdoor antenna is installed.

Note

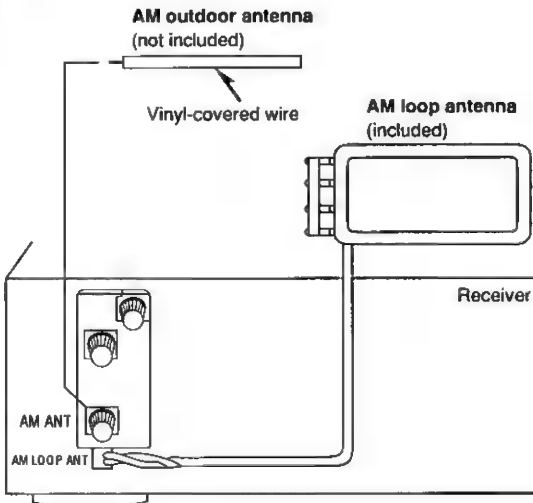
An outdoor antenna should be installed by a qualified technician only.

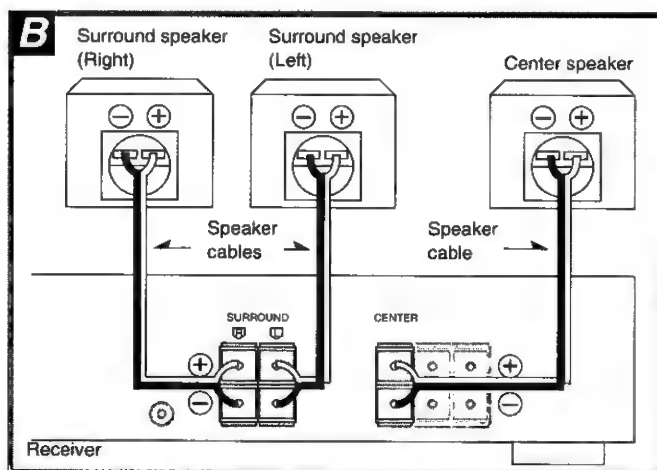
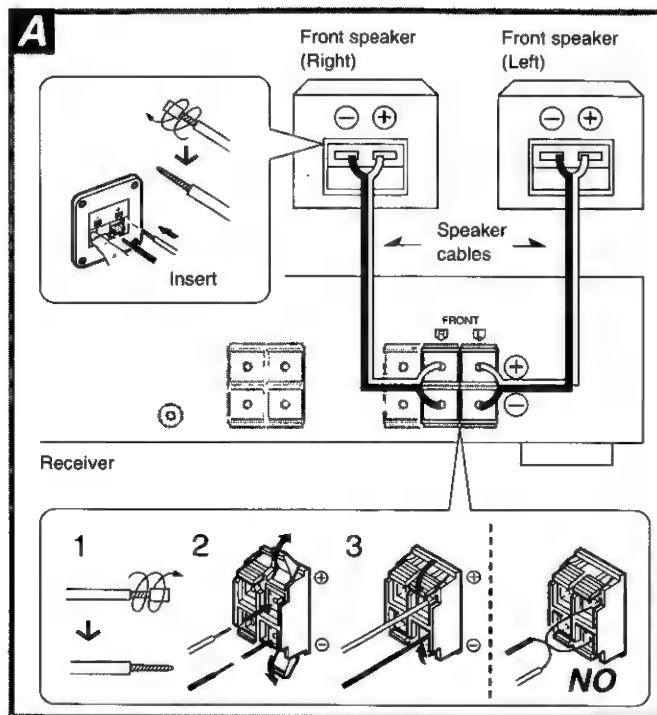
AM outdoor antenna (not included) **B**

Be sure to connect the AM loop antenna even when an AM outdoor antenna is used.

Stretch 5-12 m (16-40 ft.) of vinyl-covered wire horizontally across a window frame or other convenient location, keeping it as high as possible from the ground.

B





Speaker connections

Connection of front speakers

Note

To prevent damage to circuitry, never short-circuit positive (+) and negative (-) speaker wires.

■ Speaker impedance: 8 Ω

■ Protection circuitry (For front speakers)

These units incorporate speaker protection circuitry to protect the speaker from damage caused by excessive input or abnormal signals; when excessive input is detected, input is automatically interrupted.

● If sound is interrupted or changed...

1. Reduce the volume of the receiver.
2. Check the sound source and connections for any problems. If there is no problem, the protection circuitry will reset in a few minutes.

● After the protection circuit is reset...

Take care not to turn the receiver's volume up too high.

Connection of center speaker and surround speakers

■ Speaker impedance

Center speaker: 8 Ω

Surround speaker: 8 Ω

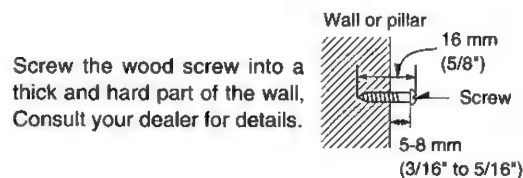
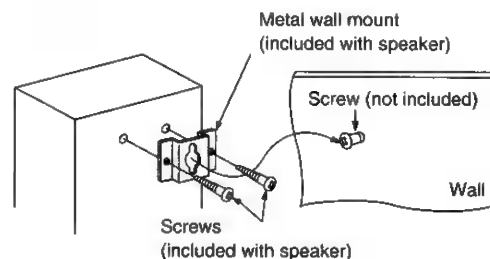
■ Wall installation of the surround speakers

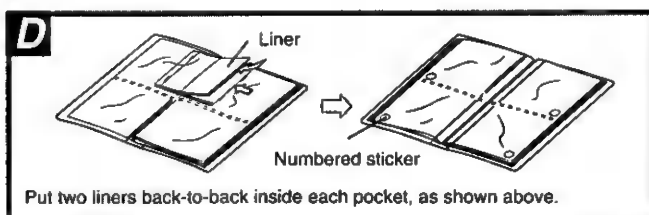
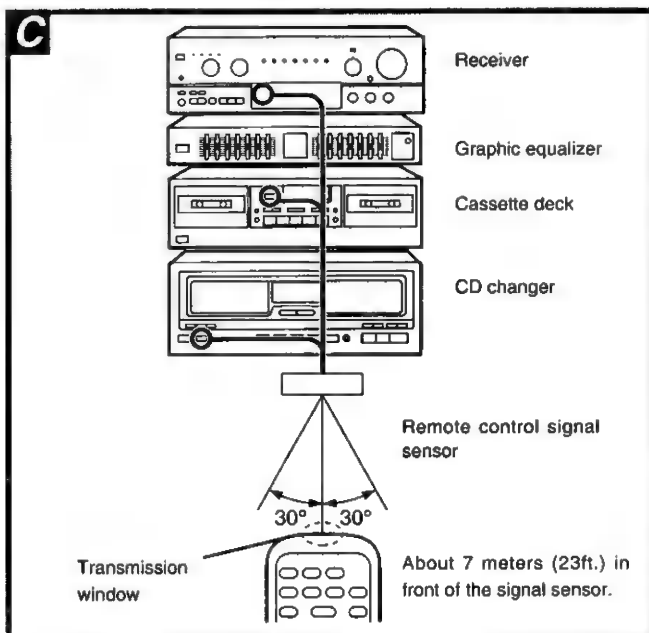
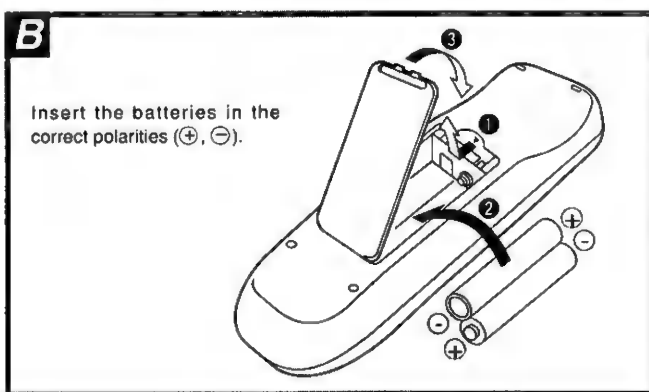
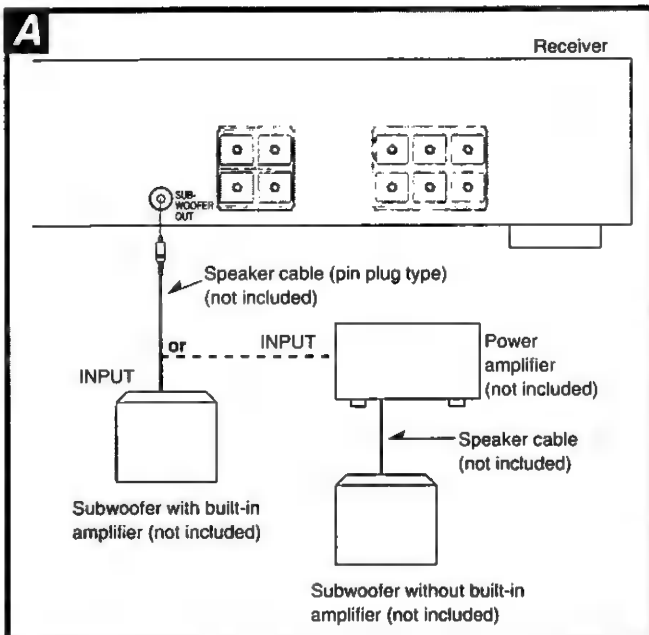
Note

The wall is required to be strong enough to hold a weight of 8 kg (17.6 lb.).

Please note that if the wall is not strong enough, it may result in a dangerous accident.

● How to install the metal wall mounts and the speakers on the wall





Connection of subwoofer

Note

This receiver has no amplifier section designed especially for the subwoofer.

For your reference

Connection to a passive subwoofer with front speaker terminals is also possible. (See the operating instructions of the subwoofer for details.)



Caution

- Use the speakers only with the recommended system. Failure to do so may lead to damage to the amplifier and/or the speakers, and may result in the risk of fire. Consult a qualified service person if damage has occurred or if you experience a sudden change in performance.
- Do not attempt to attach these speakers to walls using methods other than those described in this manual.

Concerning the remote control

Battery installation

Use of batteries

- Do not mix old and new batteries, or batteries of different types (manganese and alkaline, etc.).
- Never subject batteries to excessive heat or flame; do not attempt to disassemble them; and be sure they are not short-circuited.
- If the remote control is not to be used for a long period of time, remove the batteries and store them in a cool, dark place.
- Do not attempt to recharge alkaline or carbon batteries.
- Do not use rechargeable type batteries.

Correct method of use

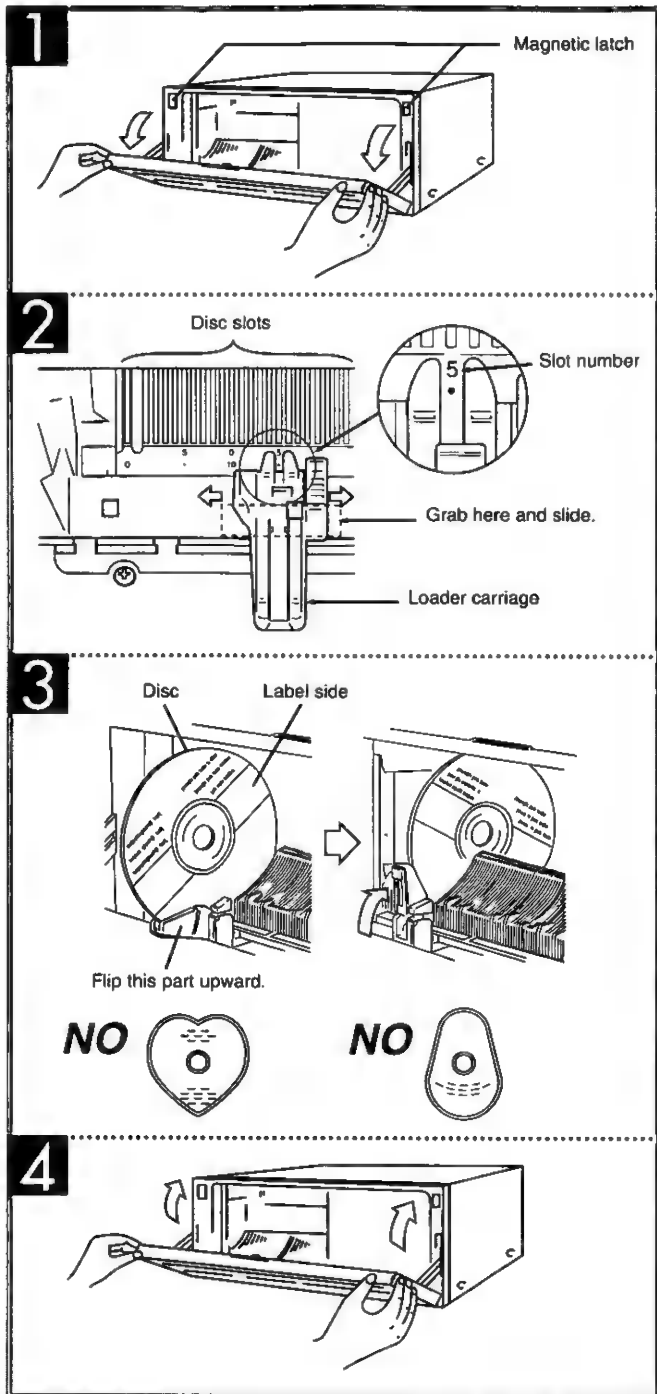
- Do not place obstacles between the remote control signal sensor and remote control unit.
- Do not expose the remote control signal sensor to direct sunlight or to the bright light of an inverter fluorescent light.
- Take care to keep the remote control signal sensor and end of the remote control unit free from dust.
- If the unit is installed in a rack with glass doors, the glass doors' thickness or color might make it necessary to use the remote control at a shorter distance from the unit.

To prevent damage

- Never place heavy items on top of the unit.
- Do not disassemble or reconstruct the unit.
- Do not spill water or other liquids into the unit.

Concerning the liner notes organizer

Your changer comes with a notebook-like binder (liner notes organizer) in which you can keep your CD liners. There are also numbered stickers to indicate slot numbers in the binder. This is a convenient way to keep track of what disc is in what slot.

A

Setting/Removing discs

How to set discs

A

- 1** Pulling gently from both ends, open the front panel.

Caution

- Except when setting or removing discs, keep hands out of the changer while open. You could injure yourself if somehow entangled in the internal mechanism.
- Keep cassette tapes away from the magnetic latches.

- 2** Slide the loader carriage to the slot No. where the disc is to be inserted.

Note

Slot No. 0 (SINGLE) is reserved for single disc play.
(See page 23.)

- 3** Set the disc on the loader and flip the loader upwards.

Caution

- Do not use 3" (8 cm) discs fitted with expander rings. Expander rings could damage the disc slots.
- Do not use cleaning discs or warped discs. All of these could damage your changer.
- Do not use discs with poorly attached labels or stickers. Adhesive protruding from peeled off stickers can cause the changer to malfunction.
- Do not use irregular shape CDs (heart-shape, octagonal, etc.).
- Do not put anything other than discs in the changer.

- 4** Close the front panel gently.

Note

If you leave the front panel open while a disc is in play, the changer will stop when the disc is finished.

How to remove discs

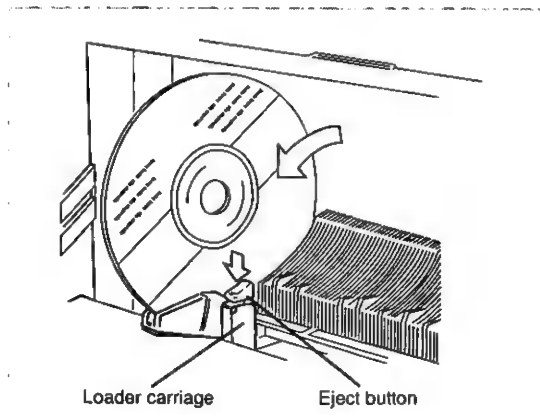
B

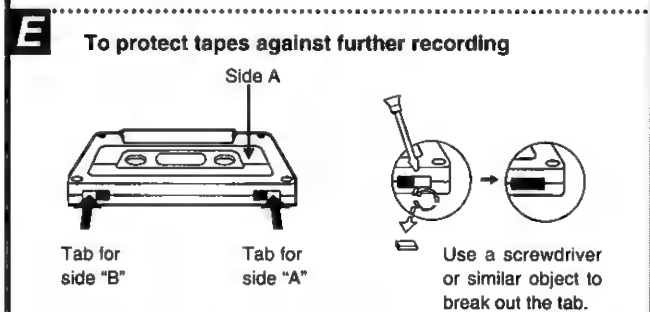
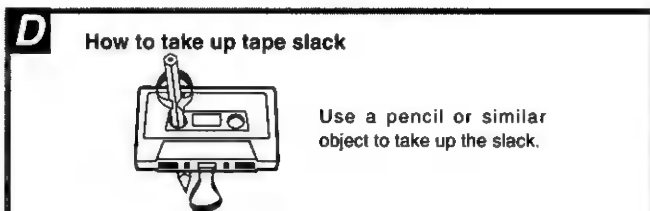
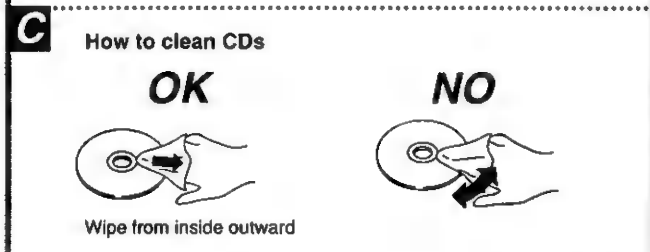
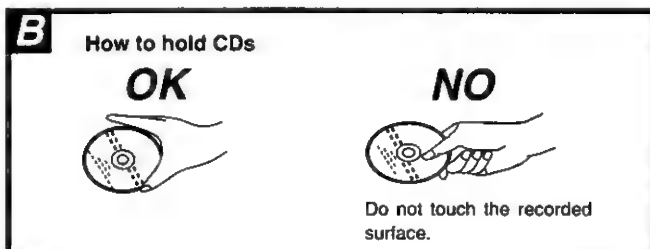
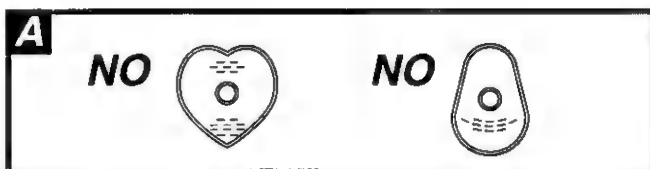
- 1.** Open the front panel.
- 2.** Slide the loader carriage to the slot you want.
- 3.** Press the eject button on the loader carriage.

Special notes

You can set and remove discs while another disc is playing.

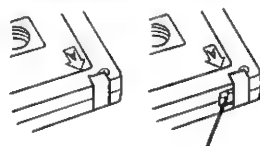
- Do not set a disc in the slot of the disc being played (slot flashes). The disc in play is returned to its slot when finished. If two discs somehow jam the slot, they could be damaged. When this happens, the message "TAKE OUT" will appear on the display. Remove the disc that doesn't belong in the slot and press the stop button.
- Do not open the CD front panel and press the eject button when "CHECKING DISCS" appears in the display. The CD mechanism will be damaged if the eject button is pressed at this time.
- Sometimes the front panel cannot be opened while a disc is playing. In such case, wait until you can open it.

B



To re-record on a protected cassette
Cover the hole with adhesive tape.

Normal position tape Hi-position tape



Detection hole

Do not cover the detection hole on hi-position tapes.

Concerning CDs

With this changer, you can only play compact discs having this mark:
However, do not use irregular shape CDs. CDs of the sort can damage the unit. **(A)**



Handling precautions **B - C**

- If you are taking the disc from a cold to a warm environment, moisture may form on the disc. Wipe this off with a soft, dry, lint-free cloth before using the disc.
- Do not write on the label side with a ball-point or other writing instrument.
- Do not use record cleaning sprays, benzene, thinner, static electricity prevention liquids or any other solvent.
- Do not use discs with poorly attached labels or stickers. Adhesive protruding from peeled off stickers can cause the changer to malfunction.

Storage precautions

Be sure to store discs in their cases to protect them from dust, scratches, and warping.

Do not place or store discs in the following places

- Locations exposed to direct sunlight
- Humid or dusty locations
- Locations directly exposed to a heat vent or heating appliance
- In the glove compartment or on the rear deck of an automobile

Concerning cassette tapes

Selection of cassette tapes

Tapes can get caught on the capstans. Use caution with the following types of tapes.

Cassette tapes exceeding 100 minutes

These tapes are made of a thin film material. Do not repeatedly advance and stop the tape, or fast-forward it or rewind it.

Endless tapes

Endless tapes with auto reversing capability can get caught on the capstans if used in the wrong way. Always read the instructions provided with the tape before using it.

Tape slack **D**

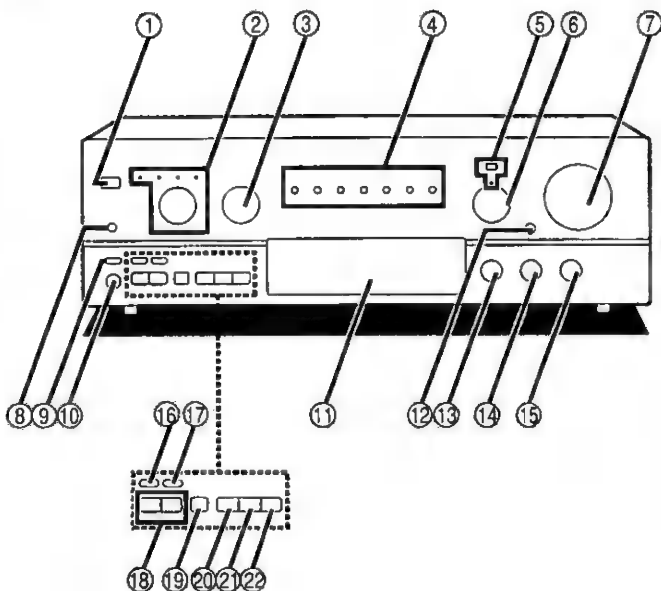
Tape slack may cause the tape to break.

Erasure prevention **E**

Storage precautions

Do not place or store tapes in the following places;

- In high temperature (95°F/35°C or higher) or high humidity (80% or higher) areas
- In a strong magnetic field (near a speaker, on top of a TV, etc.) This can erase a recording.
- Locations exposed to direct sunlight

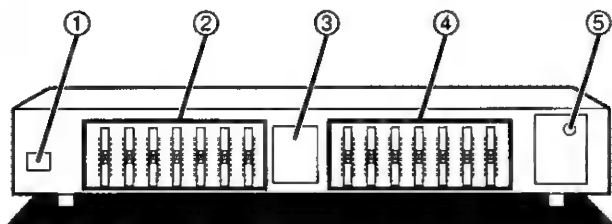
A

Front panel controls

Receiver

A

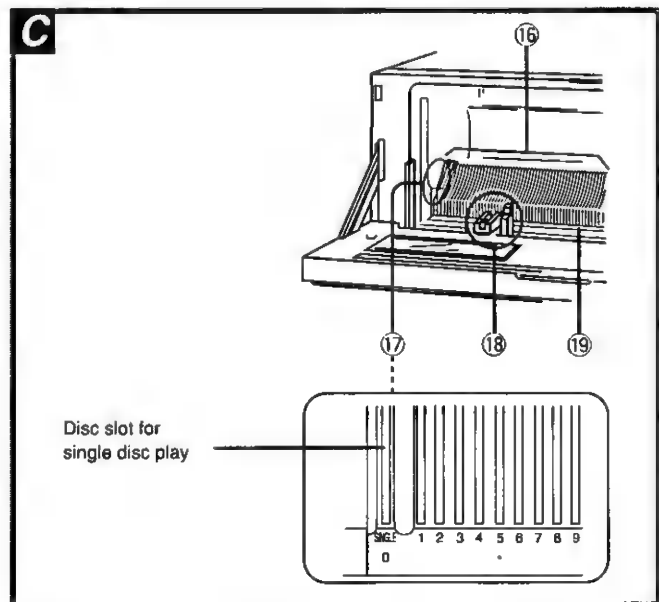
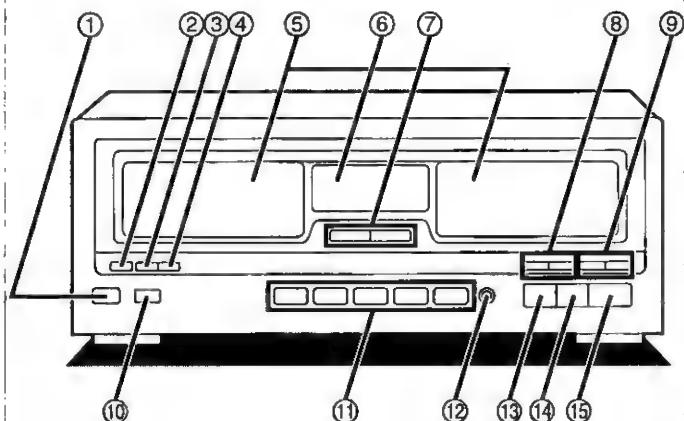
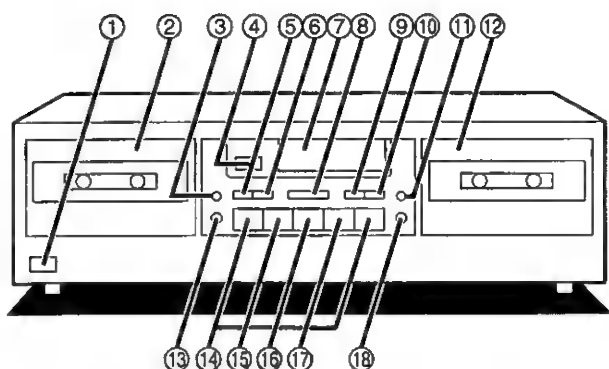
- ① **Power "⏻/⏻" switch (POWER, ⏻/⏻)**
Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.
- ② **Sound mode selector/indicators**
- ③ **SFC mode selector (MODE)**
- ④ **Input indicators**
- ⑤ **DVD 6ch input select button/indicator (DVD 6CH INPUT)**
- ⑥ **Input selector (INPUT SELECTOR)**
- ⑦ **Volume control (VOLUME)**
- ⑧ **Speaker button (SPEAKERS)**
- ⑨ **Help/reset button (-HELP/-RESET)**
- ⑩ **Headphones jack (PHONES)**
- ⑪ **Display**
- ⑫ **Tape monitor button (TAPE MONITOR)**
- ⑬ **Bass control (BASS)**
- ⑭ **Treble control (TREBLE)**
- ⑮ **Balance control (BALANCE)**
- ⑯ **Delay time adjust button (DELAY TIME)**
- ⑰ **Center mode select button (CENTER MODE)**
- ⑱ **Tuning buttons (TUNING ∇, ▲)**
- ⑲ **Radio station presetting button (PRESET)**
- ⑳ **Band select button (BAND)**
- ㉑ **FM mode select button (FM MODE)**
- ㉒ **Memory button (MEMORY)**

B

Graphic equalizer

B

- ① **Power switch (POWER)**
- ② **Left channel band-level controls/indicators**
- ③ **Signal level display (SIGNAL LEVEL)**
- ④ **Right channel band-level controls/indicators**
- ⑤ **Input select button (INPUT SELECTOR)**



Cassette deck

A

① Power "STANDBY \odot /ON" switch
(POWER, STANDBY \odot /ON)

Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.

- ② Cassette holder for deck 1
- ③ Counter reset button (COUNTER RESET)
- ④ Remote control signal sensor (SENSOR)
- ⑤ Synchro-start button (SYNCHRO START)
- ⑥ Tape-to-tape recording-speed button (SPEED)
- ⑦ Display
- ⑧ Tape deck select button (DECK 1/2)
- ⑨ Dolby noise-reduction button (DOLBY NR)
- ⑩ Reverse-mode select button (REVERSE MODE)
- ⑪ Rec pause button (● REC PAUSE)
- ⑫ Cassette holder for deck 2
- ⑬ Open button for deck 1 (▲ OPEN)
- ⑭ Rewind/fast-forward buttons (◀, ▶)
- ⑮ Reverse-side playback button (◀)
- ⑯ Stop button (■)
- ⑰ Forward-side playback button (▶)
- ⑱ Open button for deck 2 (▲ OPEN)

CD changer

B

① Power "STANDBY \odot /ON" switch
(POWER, STANDBY \odot /ON)

Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.

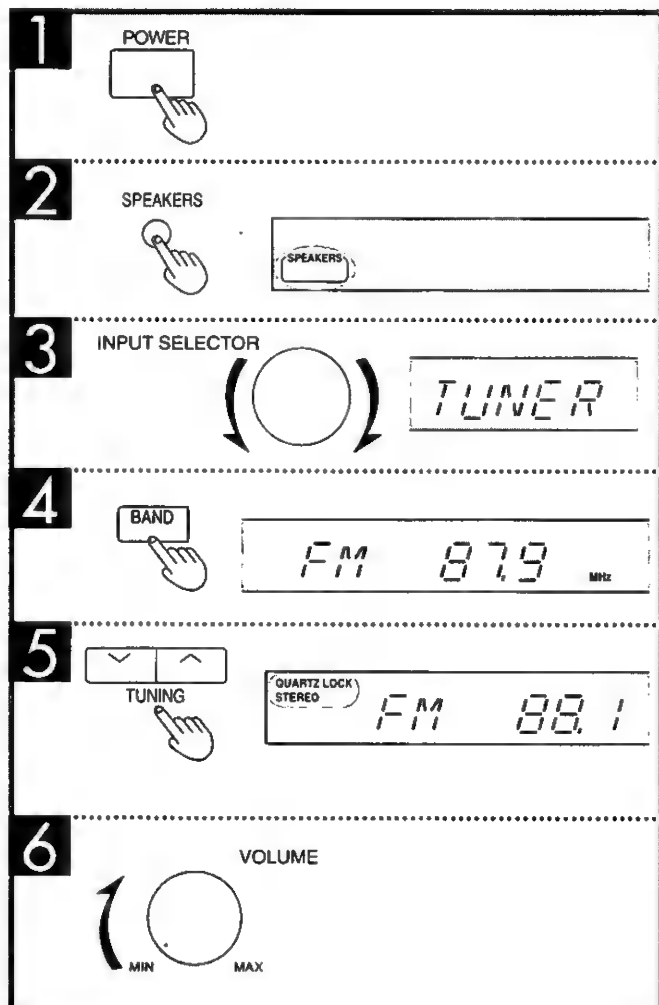
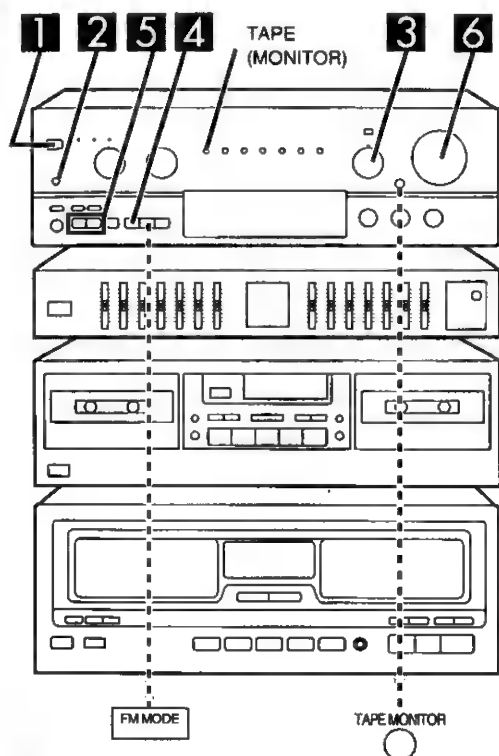
- ② Single disc play button (SINGLE ▶)
- ③ Direct programming button (DIRECT)
- ④ Programming button (PROGRAM)
- ⑤ Windows
- ⑥ Display
- ⑦ Disc skip buttons (DISC SKIP, -, +)
- ⑧ Search buttons (◀, ▶)
- ⑨ Track skip buttons (◀, ▶)
- ⑩ Remote control signal sensor (SENSOR)
- ⑪ Disc group buttons
(DISC GROUPING PLAY, A, B, C, D, E)
- ⑫ Group enter button (GROUP ENTER)
- ⑬ Stop button (■)
- ⑭ Pause button (||)
- ⑮ Play button (▶)

Disc slot section

C

For an explanation on how to open the front panel, see page 14 "How to set discs".

- ⑯ Disc slots
- ⑰ Disc slot for single disc play (SINGLE)
- ⑱ Loader carriage
- ⑲ Slot numbers



Listening to radio broadcasts

To listen to the radio without presetting stations

Sequential tuning

Use the tuning buttons to tune-in radio stations.

Before operation, set [VOLUME] to the "MIN" position.

1 Press [POWER] on the receiver.

If the "TAPE (MONITOR)" indicator and another source indicator are on, press [TAPE MONITOR] and check the indicator goes out.

2 Press [SPEAKERS] and check the "SPEAKERS" indication lights up.

If the button is pressed once more, the indicator will switch off and no sound will be heard from the speakers.

3 Turn [INPUT SELECTOR] to select "TUNER".

4 Press [BAND] to select "FM" or "AM".

5 Press [TUNING (V) or (^)] to tune to the desired frequency.

"QUARTZ LOCK" lights up when tuned.

"STEREO" lights up when an FM stereo broadcast is received.

To make an automatic search for station

If [TUNING (V) or (^)] is held down for an instant until the frequency begins to scroll, the broadcast stations are tuned in automatically when one is found.

Note

Tuning may stop automatically if any jamming is encountered.

6 Adjust the volume.

If noise is excessive in the FM stereo mode

Press [FM MODE].

("STEREO" will go out, and "MONO" will light up.)

The broadcast will be monaural, but noise will be reduced.

If the button is pressed once more, the stereo mode resumes.

While set to monaural, whenever you change the frequency or change the input source and turn the unit OFF/ON, the monaural mode is automatically canceled.

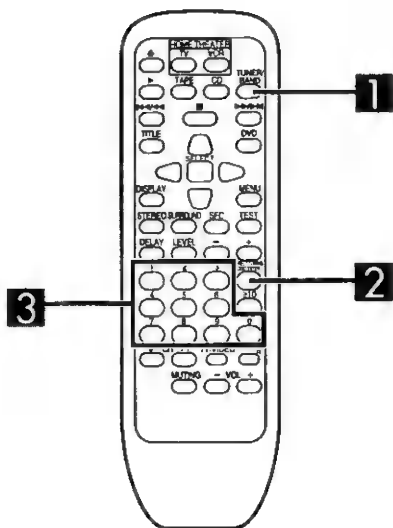
For your reference

The tuner can pick up interference from DVD players. If this occurs turn the DVD off.

When you finish listening

Be sure to reduce the volume level, and switch the power to the standby condition by pressing [POWER] of the receiver.

The power for the system can thereafter be switched between on and the standby condition by using the power switch of the receiver (provided that the power cords are connected as on page 7).



Direct tuning

by remote control only

Specify the frequency using the numeric buttons on the remote control to directly tune to the desired station.

1 Press [TUNER/BAND].

This will set the remote control to operate the tuner. The selector on the receiver will change to "TUNER". Each time the button is pressed, the band will change as follows, FM \rightleftharpoons AM.

2 Press [DIRECT TUNING/DISC ENTER].

3 While cursor display is flashing (approx. 10 seconds) Press the numeric buttons to enter the frequency.

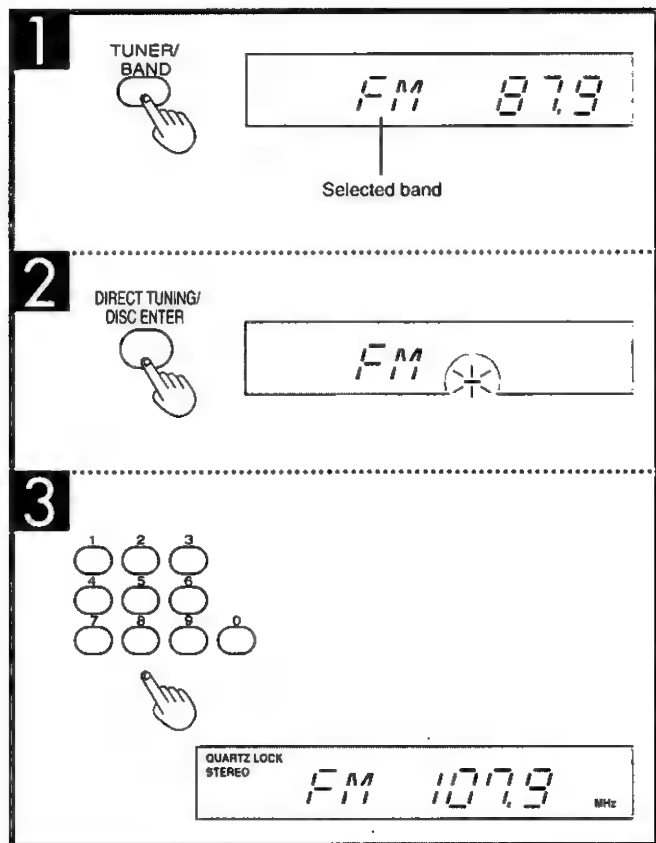
If the desired FM frequency is 107.9 MHz, press

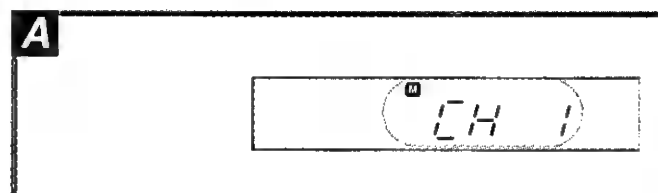
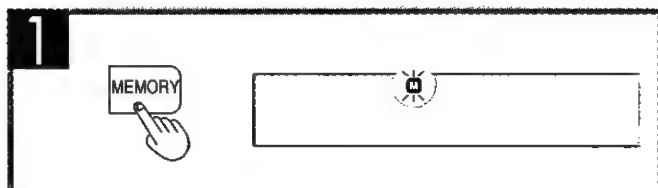
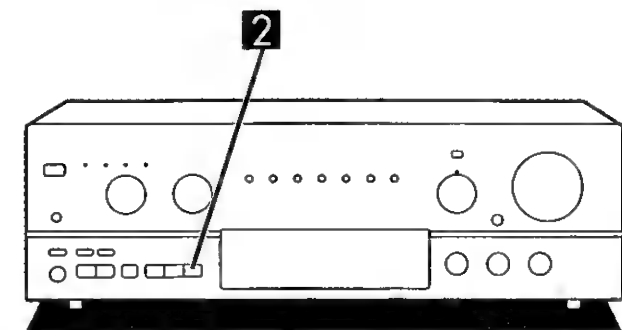
1 \rightarrow 0 \rightarrow 7 \rightarrow 9.

If the frequency has been input correctly, the displayed frequency will blink once.

Note

1. If no button is pressed while the cursor display is flashing, the display will return to the frequency which is currently being received. To re-specify the frequency, repeat the procedure from step 2.
2. If the frequency has not been input correctly, "ERROR" will be displayed. In this case, re-enter the frequency.





Listening to radio broadcasts

Preset tuning

Presetting radio stations into the memory channels of this unit makes selecting stations simple.

A total of 30 FM and AM stations can be preset.

Please remember this

If a new broadcast station is preset into a channel, the setting for the broadcast station which was previously entered in that channel will be automatically erased.

Automatic memory presetting

Automatic memory presetting allows this unit to automatically search for broadcast stations and then preset them into memory. With this method, the channels that can be preset into the memory are set as follows for different bands (FM or AM).

When FM stations are preset,

For FM stations 1-30

When FM and AM stations are preset,

For FM stations 1-20

For AM stations 21-30

- 1** Set to the frequency from which you want to start automatic memory presetting.
(➡ Page 18-19.)

- 2** Press [MEMORY] until the frequency begins to change.

(Automatic memory presetting will start.)

During automatic memory presetting, the memory indicator will flash while the frequency scrolls.

To stop, press [MEMORY] once again.

When a broadcast station is preset **A**

The memory indicator and the preset channel number will be displayed for approximately 1 second.

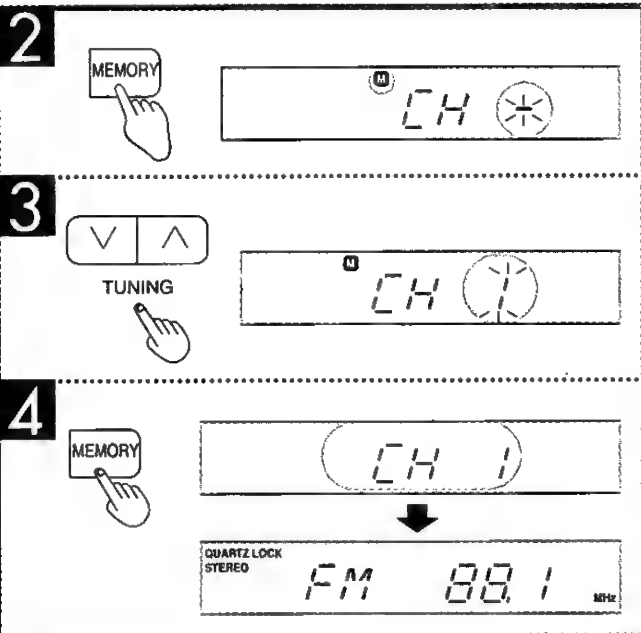
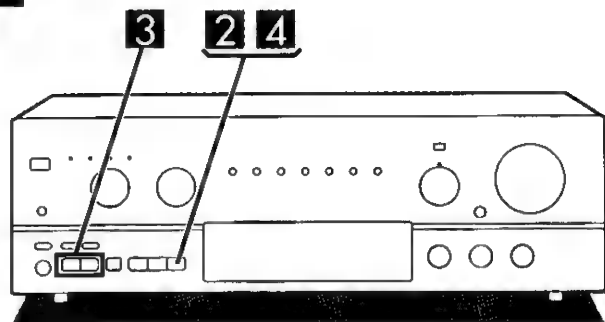
When presetting is completed

The last broadcast station to be preset will be displayed.

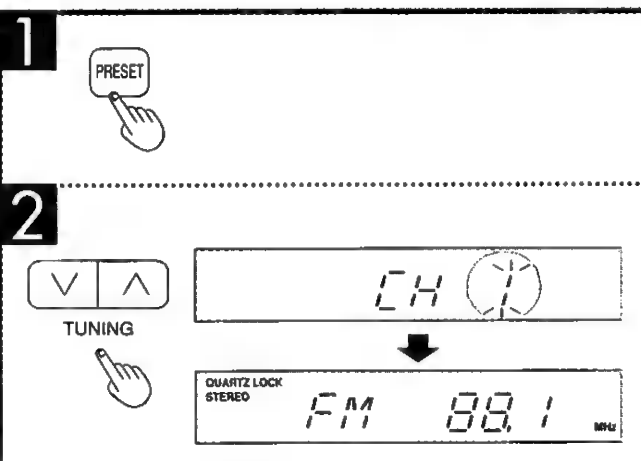
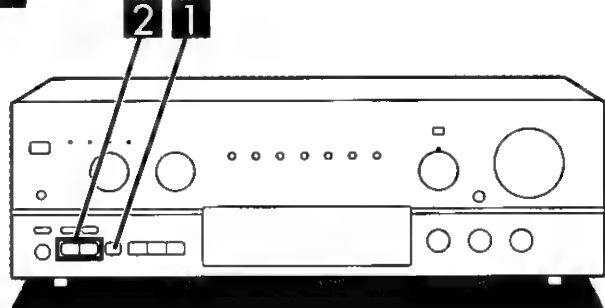
Note

Frequencies may not be preset correctly in cases where the broadcast waves are too strong or too weak. In such cases, carry out presetting manually. (➡ Page 21.)

A



B



Manual memory presetting **A**

The desired stations can be preset into the desired channels by the user.

- 1 Set to the desired frequency.**
(→ Page 18–19.)

If interference or static is keeping you from enjoying an FM broadcast, press [FM MODE] and change to monaural. You can preset the station in monaural just as in stereo.

- 2 Press [MEMORY].**
To cancel the memory function, press [MEMORY] again.

- 3 Press [TUNING (V) or (^)] to select the desired channel.**
Holding the buttons down lets you scroll through channels faster.

- 4 Press [MEMORY].**
The channel will blink on the display.

To continue presetting
Repeat steps 1 through 4.

To listen to preset channels **B**

- 1 Press [PRESET].**

- 2 Press [TUNING (V) or (^)].**
Holding down the buttons lets you scroll through channels faster.

The channel number will be changed for approximately 5 seconds. Select the desired channel number during that time. After 5 seconds, the display will change from the channel number to the frequency.

Note

If you press [PRESET] while the channel number is displayed, the display will change to the frequency.

To confirm the channel number of the broadcast station being received

Press [PRESET].
(The channel number will be displayed for approximately 5 seconds.)

Note

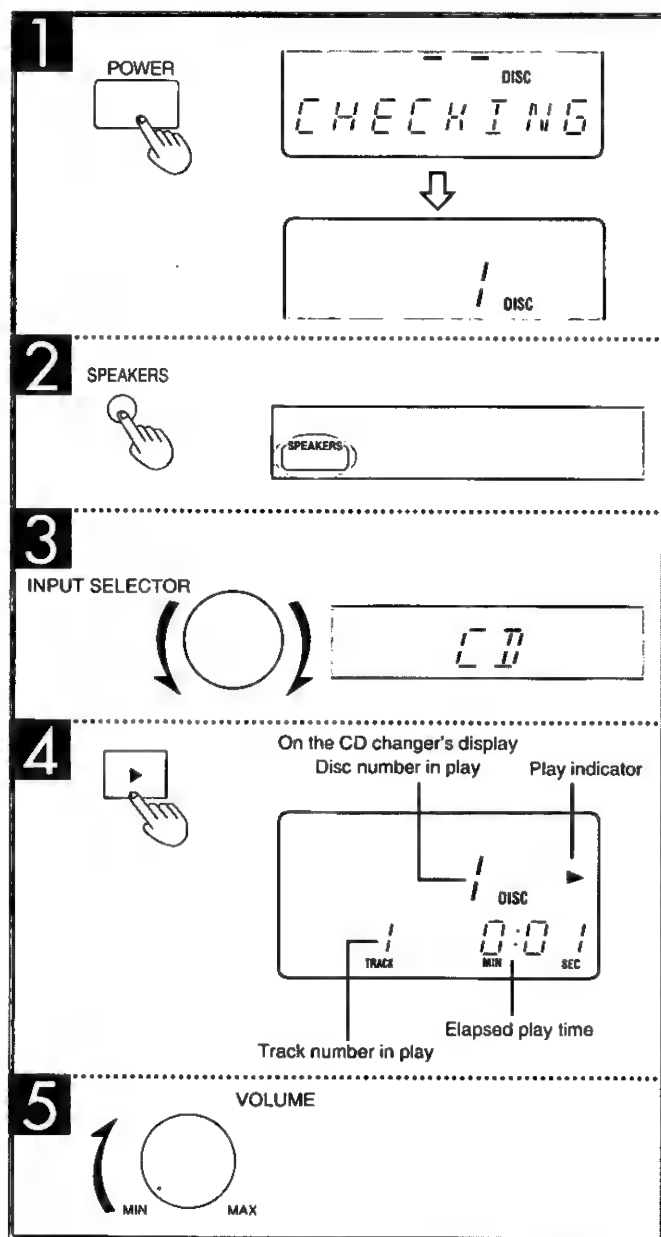
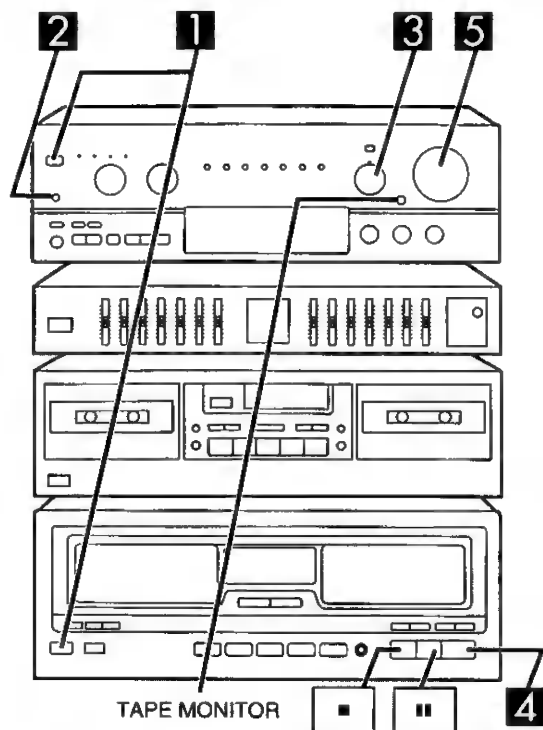
The channel number is not displayed if you change the frequency or FM mode setting.

For your reference

Even if the power cord is disconnected from the household AC outlet, the memory will retain its contents for approximately one month.

If frequency presettings are accidentally erased

Program the presettings once again.
The power cord should remain connected for one hour or more for the memory back-up to be effective.



Listening to compact discs

Sequential play

The changer plays all the tracks on all the discs in order and stops automatically when the last track on the last disc finishes playing.

Before starting, load your discs.

- 1 Press **[POWER]** on the receiver and CD changer.
First switch on the power of the receiver.

The unit will switch on.

Momentarily, the message "CHECKING DISCS" will appear on the display.

When it goes out, the last disc played will be displayed.

If the "TAPE (MONITOR)" indicator and another source indicator are on, press [TAPE MONITOR] and check the indicator goes out.

- 2 Press **[SPEAKERS]** and check the "SPEAKERS" indication lights up.
If the button is pressed once more, the indicator will switch off and no sound will be heard from the speakers.

- 3 Turn **[INPUT SELECTOR]** to select "CD".

- 4 Press **[▶]**.
Play will begin.

- 5 Adjust the volume.

To stop play

Press **[■]**.

The display will show the total number of track and the total playing time of the current disc. (➔ See page 23.)

Press **[▶]** to re-start play.

Note

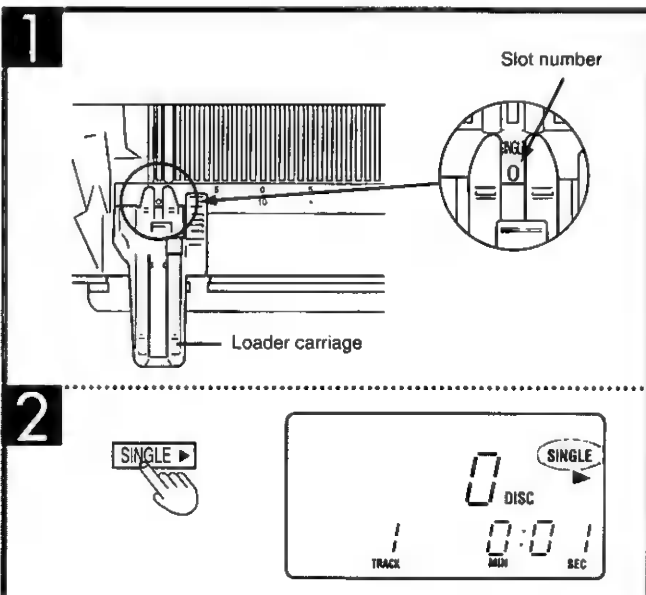
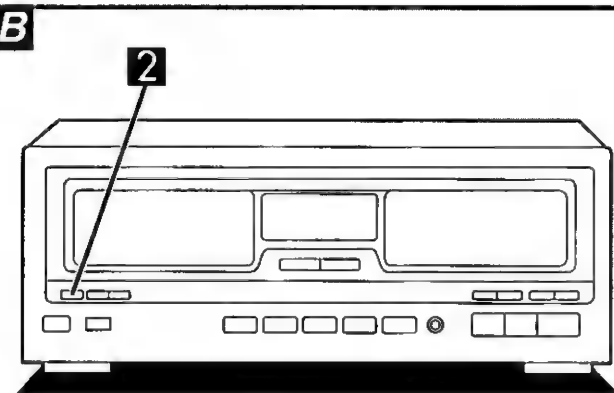
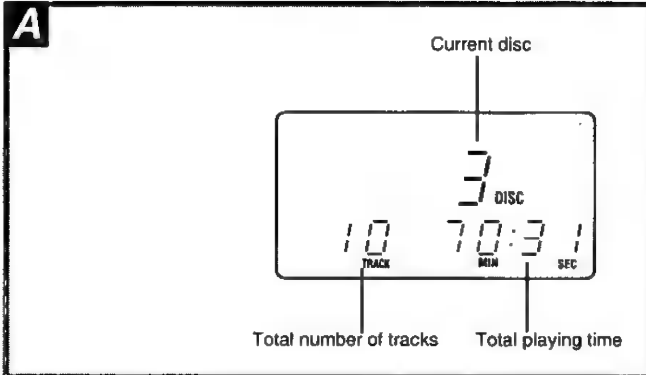
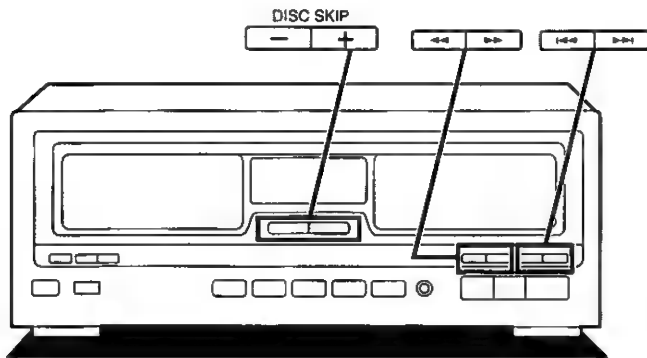
It takes roughly 3 seconds from the time you press **[■]** until the disc is returned to the slot.

To temporarily stop play

Press **[⏏]**.

The "⏏" indicator will light up.

Press **[▶]** to resume play.



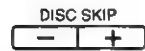
To search for the desired position



To skip tracks



To skip discs



(For detailed information concerning these buttons, please refer to pages 29-30.)

Displayed information when play is stopped **A**

The total playing time displayed includes the silent sections between tracks. For this reason, it may be a few seconds longer than the playing time indicated on the disc.

When you open the front panel, the total number of tracks and the total playing time go out.

After listening is finished

Be sure to reduce the volume level, and switch the power to the standby condition by pressing [POWER] on the receiver.

Single disc play

Single disc play is convenient when you want to playback a specific disc right away, without going through the usual selection procedure, for example, to listen to a disc you just bought.

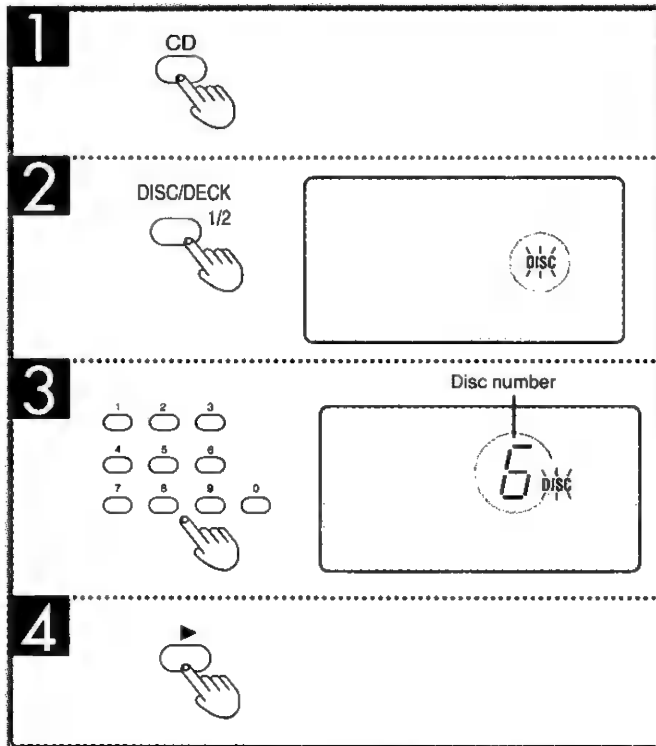
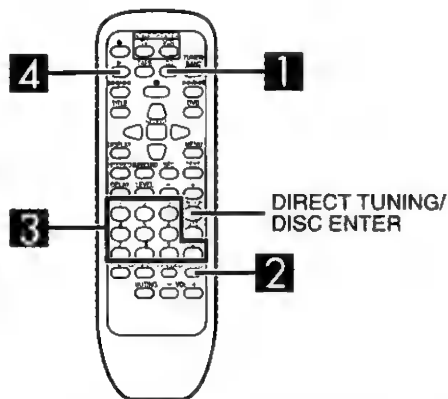
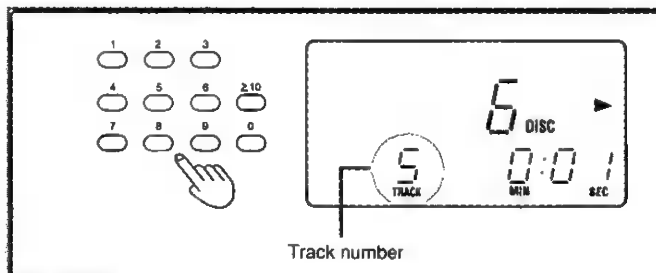
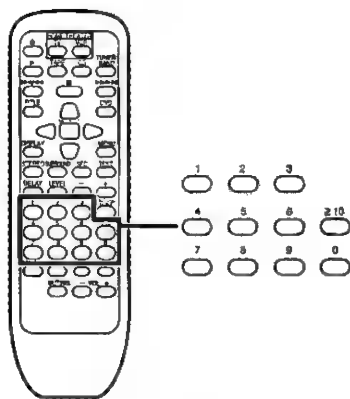
1 Open the front panel, and set the disc in slot No. 0. Face the label to the right and flip the loader upwards to set the disc.

2 Close the front panel and press [SINGLE ▶].

The changer plays all the tracks in order and stops automatically when the last track finishes playing.

To cancel single disc play mode

- Skip to another disc with [DISC SKIP (-) or (+)].
- Select a group.
- Select another disc with the numeric buttons of the remote control.

A**B**

Listening to compact discs

Direct access play

(Only available from the remote control.)

To directly access a specific disc **A**

- 1** Press [CD].
This will set the remote control to operate the CD changer.
- 2** Press [DISC/DECK 1/2].
- 3** [Within 7 seconds]
Select the disc you want with the numeric buttons.

To select a disc from 1 to 9

For example: "6"

To select a disc from 10 or higher

For example: "19"

→

Push the buttons within 7 seconds of each other.

Note

When selecting discs, the ≥10 button does not respond to touch.

- 4** [Within 7 seconds]
Press [▶].
The changer will start playing the selected disc from the first track.

For your reference

- If you press [DIRECT TUNING/DISC ENTER] instead of [▶] to select a disc, the disc number will be displayed but play will not start automatically.
- When in the stop mode, if you select an empty slot, the message "NO DISC" will appear on the display.
- While a disc is playing, if you select an empty slot, the changer will automatically play the next disc available.
- If you select "0", the changer will switch to the single disc play mode.

To directly access a specific track **B**

After selecting a disc, select a track with the numeric buttons.

Press the numeric button(s) to select the track.

To select a track from 1 to 9

For example: "6"

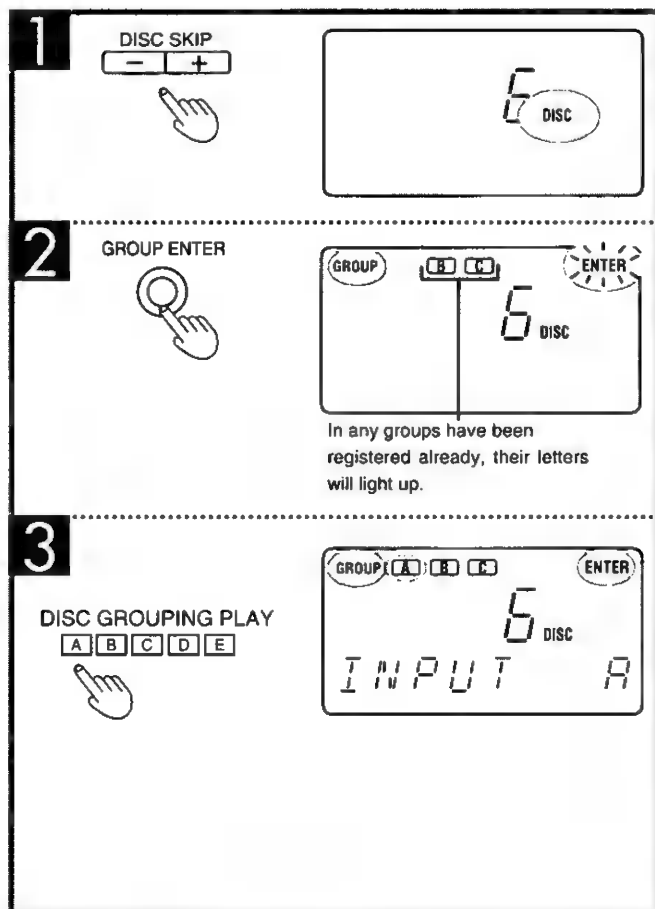
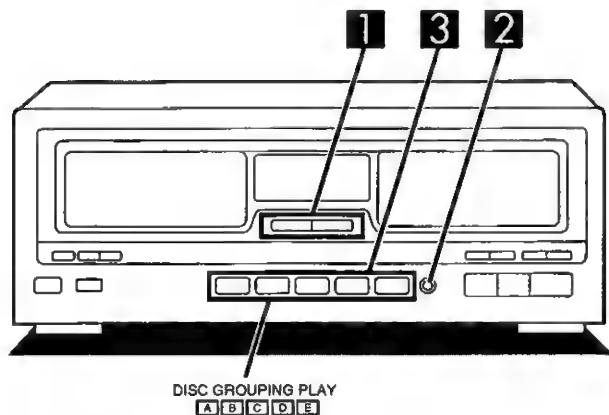
To select a two-digit track number 10 or higher

For example: "19"

→ →

Push the buttons within 7 seconds of each other.

Play will begin from the selected track.



Disc grouping play

With disc grouping play, you can register discs into any of the five available groups (A-E) and then play only the discs in a specific group.

- The same disc can be registered in as many groups as you like.
- Each group can hold up to 60 discs.
- You can name each group.

To make groups

- 1** [In the stop mode]
Press [DISC SKIP (-) or (+)] to select the disc.

Note

- You cannot select slot No. 0.
- The changer skips over empty slots.

For your reference

You can also select a disc number by using the remote control. (See page 24.)

- 2** Press [GROUP ENTER].

- 3** [Within 7 seconds]
Press the [DISC GROUPING PLAY] button you want.
(This inputs the disc in the group.)

For example: To input disc in group A.
Press [A].

- 4** Repeat steps 1, 2 and 3 until you have completed all items.

To cancel disc grouping play mode

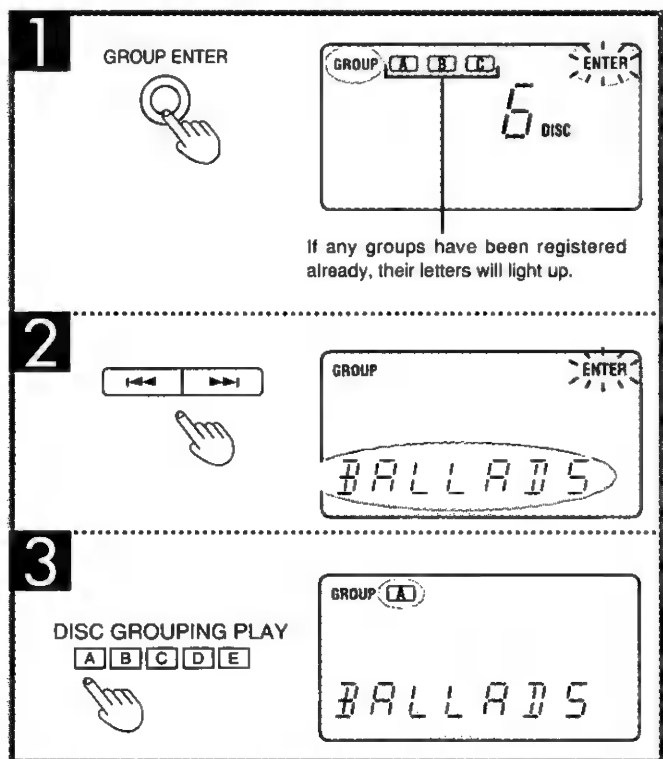
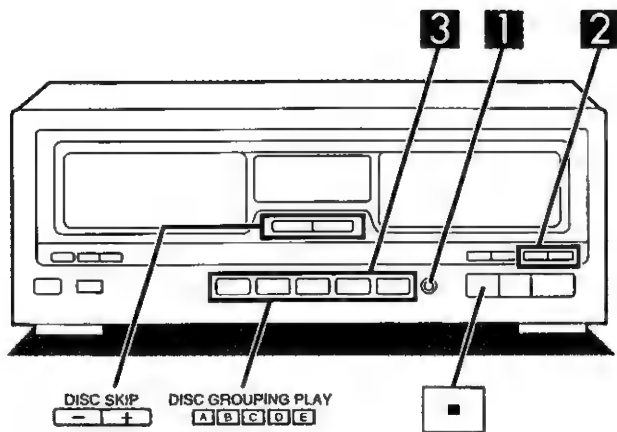
[In the stop mode]
Press the [DISC GROUPING PLAY] button indicated on the display.

The group indication on the display will go out.

For your reference

The group contents will remain stored in memory even after the unit is switched off.

However, if the power cord is unplugged or the power supply is otherwise interrupted for an extended length of time, the contents will be erased from memory.



Listening to compact discs

To name groups

You can name your groups. The changer has several preset names to choose from.

- 1** [During sequential play or while stopped]
Press [GROUP ENTER].
- 2** [Within 7 seconds]
Select the name you want with [◀] and [▶].
Names change in rotation as shown below, every time you press [◀] or [▶].

BALLADS ↔ BLUES ↔ CLASSIC ↔ COUNTRY ↔ DANCE
 ↓
 RESET
 ↓
 ROMANTIC
 ↓
 ROCK ↔ POP ↔ PARTY ↔ OLDIES ↔ NEW AGE ↔ JAZZ
 ↑
 FAVORITE
 ↑
 HIP HOP
 ↑
 JAZZ

- 3** [Within 7 seconds]
Press the [DISC GROUPING PLAY] button for the group you want to name.

For example: To name group A
Press [A].

- 4** Repeat steps 1, 2 and 3 to name other groups.

To cancel names

Select "RESET" in step 2 and then the name of the group you want to cancel in step 3. Thereafter, the group will appear as "GROUP ..." (A,B,C,D or E).

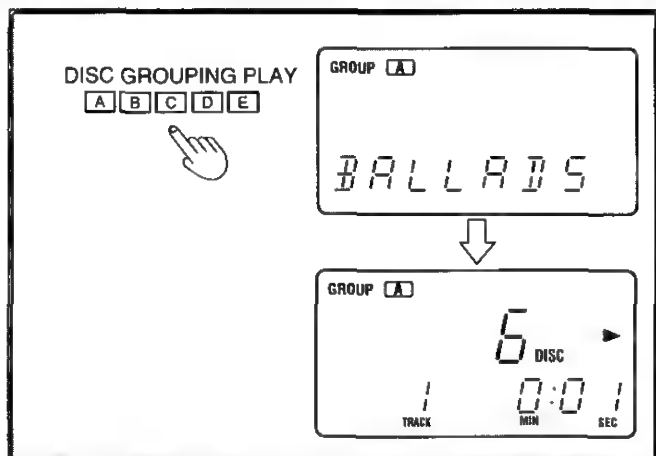
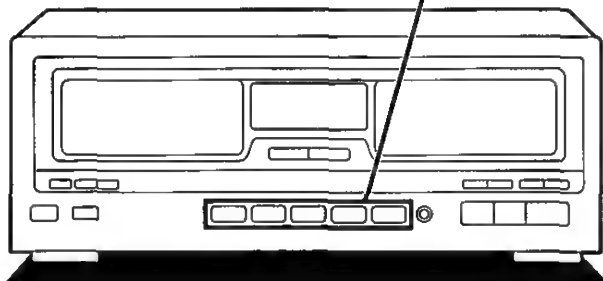
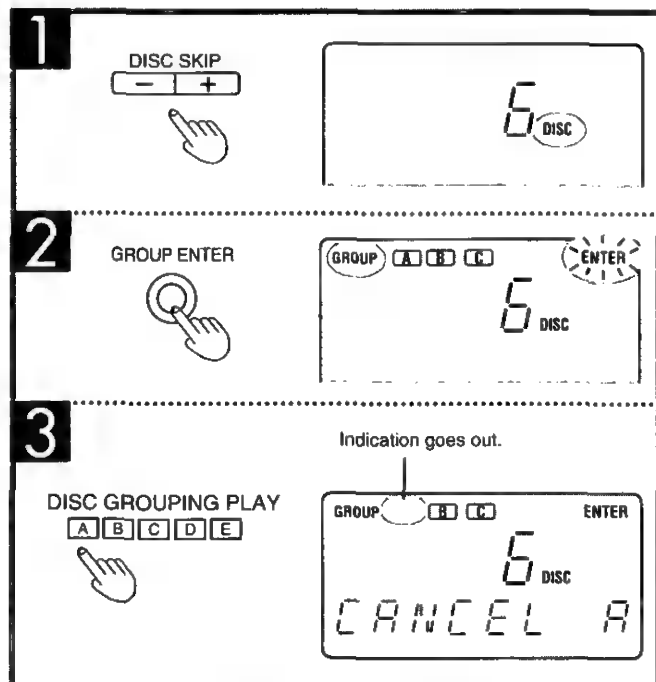
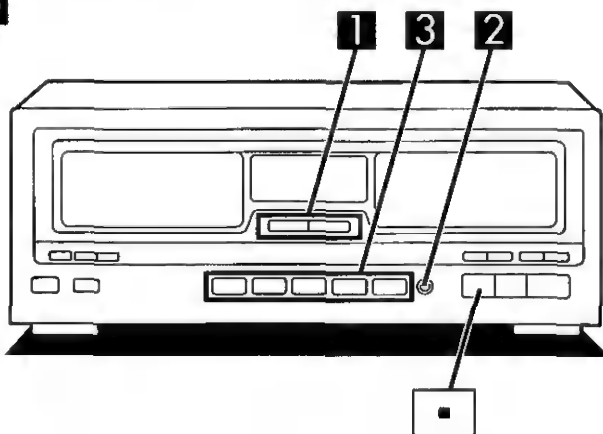
To check what discs are in what groups

[During sequential play or while stopped]

1. Press the [DISC GROUPING PLAY] button (A, B, C, D or E) you want and then press [■].
2. Press either [DISC SKIP (-) or (+)].
Every time you press [DISC SKIP], the next disc number in order is displayed.

Note

After checking, if you press the button of a group that is lit on the display, the disc grouping mode disengages.

ADISC GROUPING PLAY
A B C D E**B****Listening to compact discs****To start play A**

Unless otherwise specified, the changer selects sequential play.

[During sequential play or while stopped]

Press the [DISC GROUPING PLAY] button of the group you want.

For example: To hear group A

Press [A].

Note

- Unnamed groups will be displayed as "GROUP A, B, C ..." and so forth.
- If you press the group button of a group which has no discs registered in it, the message "NO INPUT" will appear on the display.

To cancel discs from groups B**1**

[In the stop mode]

Press [DISC SKIP (-) or (+)] to select the disc.

2

Press [GROUP ENTER].

3

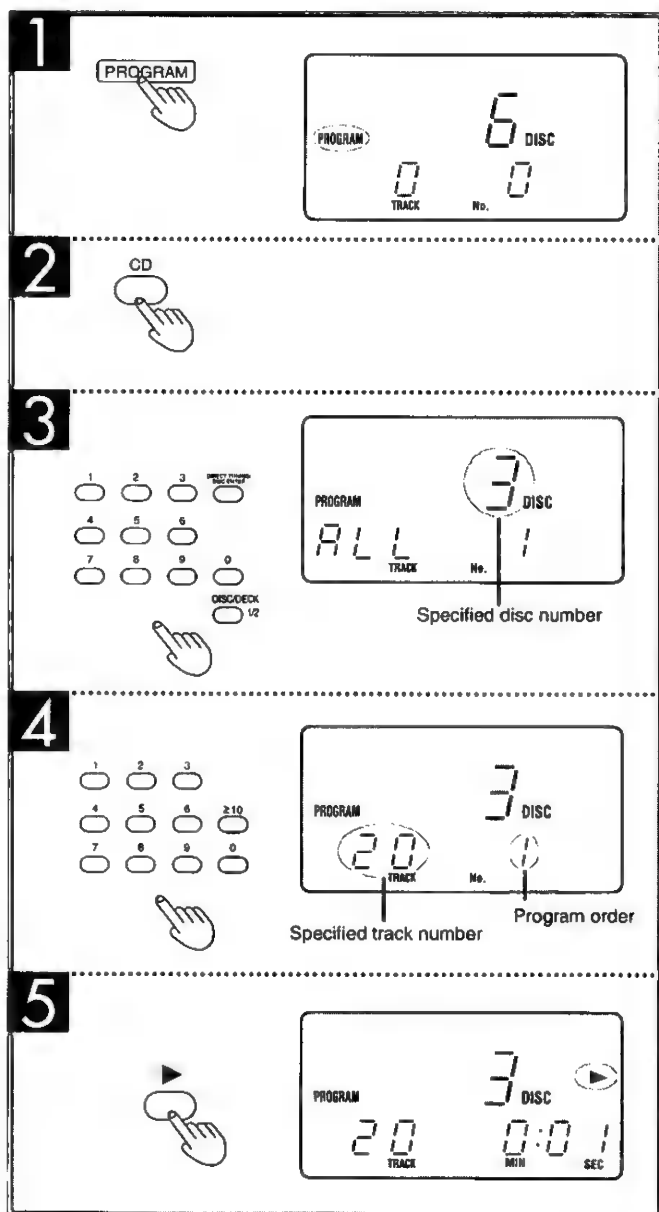
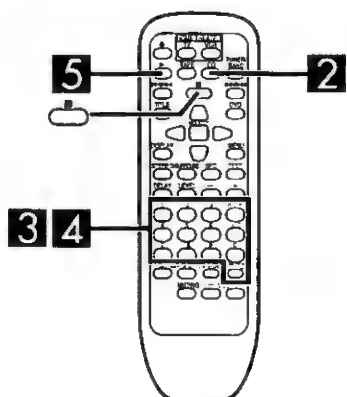
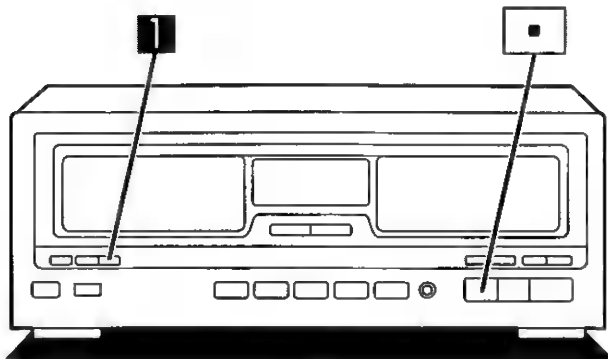
[Within 7 seconds]

Press the [DISC GROUPING PLAY] button you want.

For example: To cancel disc No. 6 from group A.

Press [A].

If the disc is registered in more than one group, you can cancel it from all groups in a single operation by pressing [■] in step 3 (in the stop mode).



Listening to compact discs

Program play

Program play lets you playback your favorite tracks in the sequence you want to hear them. The program can hold up to 32 items.

- 1** [In the stop mode]
Press **[PROGRAM]**.
- 2** Press **[CD]**.
This will set the remote control to operate the CD changer.
- 3** Select the disc(s) with the numeric buttons.
To select disc 3.
DISC/DECK 1/2 → 3 → DIRECT TUNING/DISC ENTER

"ALL" indicates that the whole disc is selected. To program by disc, repeat the above. (The count increases by one for each operation.) You can select slot No.0.
- 4** Press the numeric button(s) to specify the track.
To select track No.20.
≥10 → 2 → 0

To program tracks from the same disc, repeat this step.

Repeat steps 3 and 4 until you have completed all entries.

"PGM FULL" is displayed if you attempt to enter a 33rd selection.

If you enter non-existing disc(s) or track(s), the corresponding indicator illuminates and the entry is included in the count. During play, the changer will cancel the non-existing entry.

- 5** Press **[▶]** to start play.
To enter other selections during play, repeat steps 3 and 4.

To clear all programmed contents

[In the stop mode]

Press **[■]**.

To quit the program mode

[In the stop mode]

Press **[PROGRAM]**.

The changer will return to the sequential play mode.

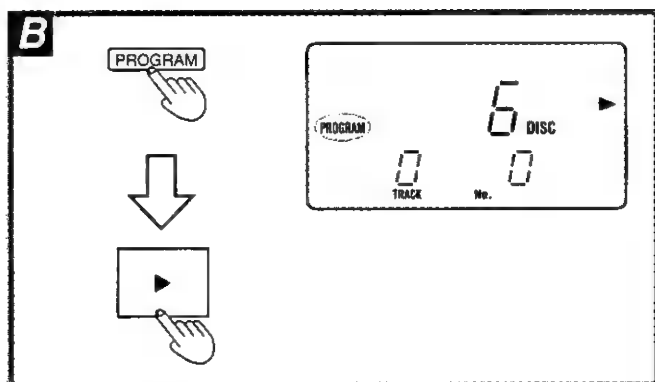
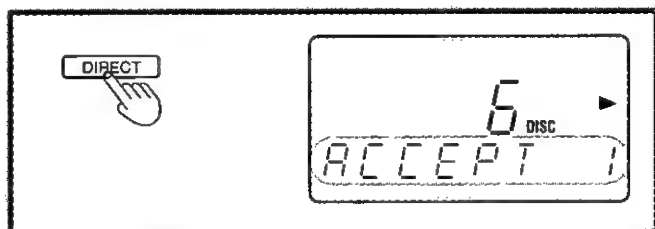
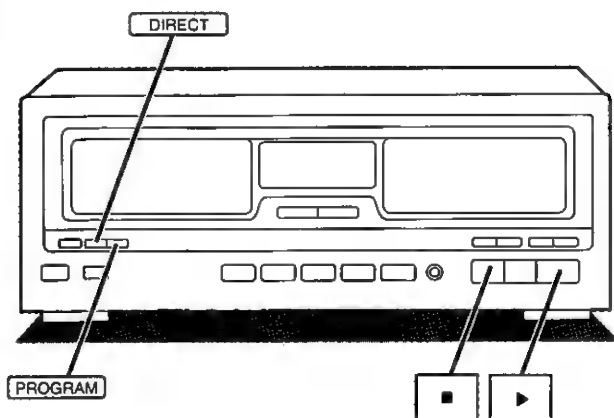
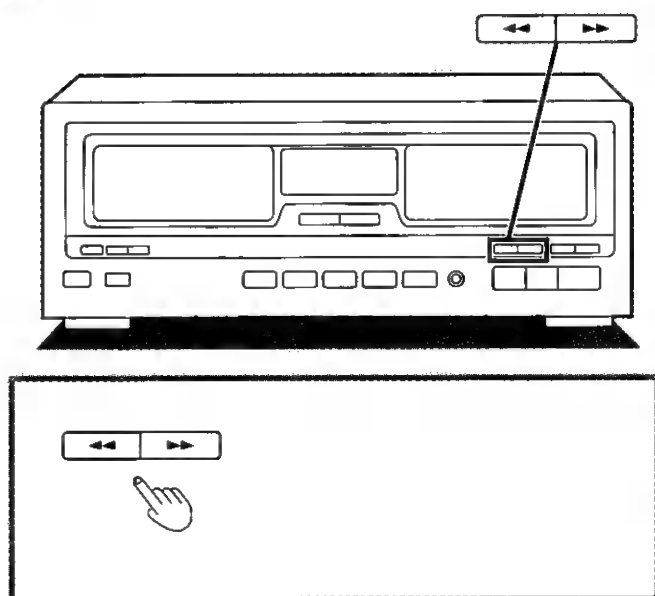
If the mode is exited in this fashion, it is possible to re-enter the mode and listen to the same program after enjoying other modes of play. If discs are replaced, the new discs are included in the program. If a disc is removed or the new disc doesn't have the programmed track number, those entries are canceled as the program is played.

For your reference

The program is stored even if the unit is turned off or disconnected from its power supply. Extended disconnection will eventually result in erasure of the program.

Special note on recording programs

The changer needs time to change discs and find tracks. It will take the changer slightly longer than the total track time to record everything. How much longer depends on the program.

A**C**

Listening to compact discs

Direct programming

A

If, while listening to a certain track, you decide that you want to add that track to your program, you can with direct programming.

[While the track you want to program is playing]

Press [DIRECT].

The current track will be added to the tail end of the program. When you make a program as explained under "Program play", and then perform the above procedure without clearing the program first, the selected track is added to the end of the program.

Note

- You cannot add to the program if already full, that is, if 32 selections have already been programmed. If you press [DIRECT] in this case, the message "PGM FULL" will be displayed. Therefore, direct programming is possible only when 31 or less tracks have been programmed.
- During program play, the [DIRECT] button does not respond to touch.

To listen to programmed tracks **B**

[In the stop mode]

Press [PROGRAM] and check "PROGRAM" appears on the display, then press [▶].

The program will start from the first track.

To clear all programmed contents.

[In the stop mode]

Press [■].

Search function

C

You can search rapidly forward or backward on the disc for specific sections.

[In the play or pause mode]

Press and hold [◀◀] or [▶▶].

◀◀ : You can search backward.

▶▶ : You can search forward.

Release the button when you reach the desired point.

The changer will return to the previous mode (play or pause).

In the sequential/disc grouping play mode

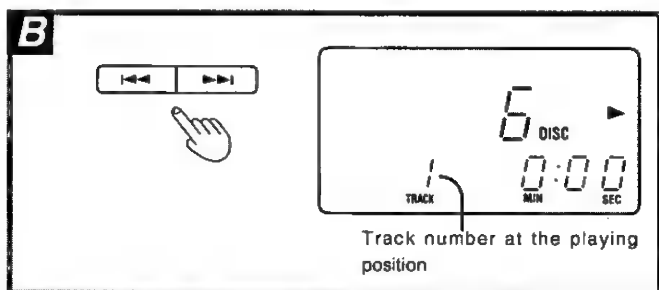
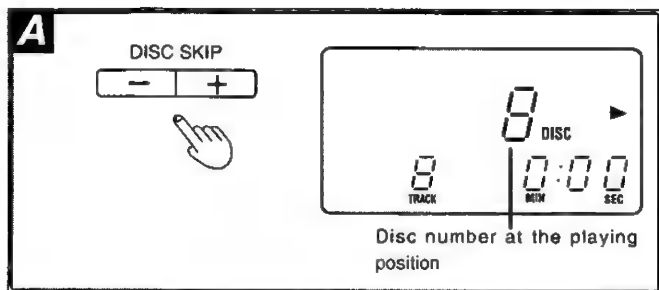
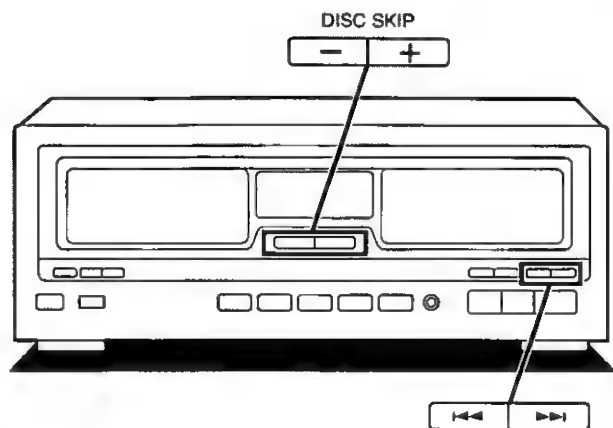
When the changer finishes searching the current disc, it starts searching the next one.

In the single disc play mode

You can search forward or backward only within the current disc.

In the program play mode

You can search forward or backward only within the current track.



Listening to compact discs

Skip function

To skip discs **A**

Use this function to skip discs to select a disc you wish to listen to.

You can use this function in stop, sequential play and disc grouping play modes.

Press [DISC SKIP (-) or (+)] until you reach the desired disc.

-: Skips to the preceding disc.

+: Skips to the next disc.

Note

- The changer skips over empty slots.
- This function does not work during program play.
- If you attempt to use this function during single disc play, the changer will cancel single disc play.

To skip tracks **B**

Use this function to skip tracks to select a track you wish to listen to.

Press either [<<] or [>>] until you reach the desired track.

<<: You can skip backward.

>>: You can skip forward.

In the sequential/single disc/disc grouping/program play mode

In the program play mode, you can skip from one track to another in the programmed sequence.

In any other mode, you can skip forward and backward within the current disc only.

<<<: You can skip to the beginning of the track being played. If you press this button again quickly, you can skip to the beginning of the previous track.

>>>: You can skip as many tracks as the number of times you press the button.

You can also skip tracks when the changer is in the stop mode or pause mode.

Listening to cassette tapes

Types of tapes which can be played on this unit:

Normal position/TYPE I	OK
High position/TYPE II	OK
Metal position/TYPE IV	OK

The unit automatically identifies the type of tape.

The procedures described below are an example of playback on Deck 1.

- 1 Press [POWER] on the receiver and cassette deck.
First switch on the power of the receiver.

If the "TAPE (MONITOR)" indicator and another source indicator are on, press [TAPE MONITOR] and check the indicator goes out.

- 2 Press [SPEAKERS] and check the "SPEAKERS" indication lights up.

If the button is pressed once more, the indicator will switch off and no sound will be heard from the speakers.

- 3 Turn [INPUT SELECTOR] to select "TAPE".

- 4 Press [▲ OPEN] on Deck 1, and then insert the cassette tape.

Close the cassette holder by hand.

To play back on Deck 2, press the button (4) for Deck 2.

- 5 Press [DOLBY NR] to listen to tapes recorded by Dolby B-type noise-reduction.

(⇒ Refer to "Dolby noise-reduction system" on page 32.)

- 6 Press [REVERSE MODE] to select the appropriate reverse mode.

Each time the button is pressed, the indicator will change in the order:

→ : One side only.

↔ : Both sides repeatedly (up to 9 times).

∞ : Both sides, once only.

(⇒ Refer to "Reverse function" on page 32.)

- 7 Press [▶] (or [◀]).

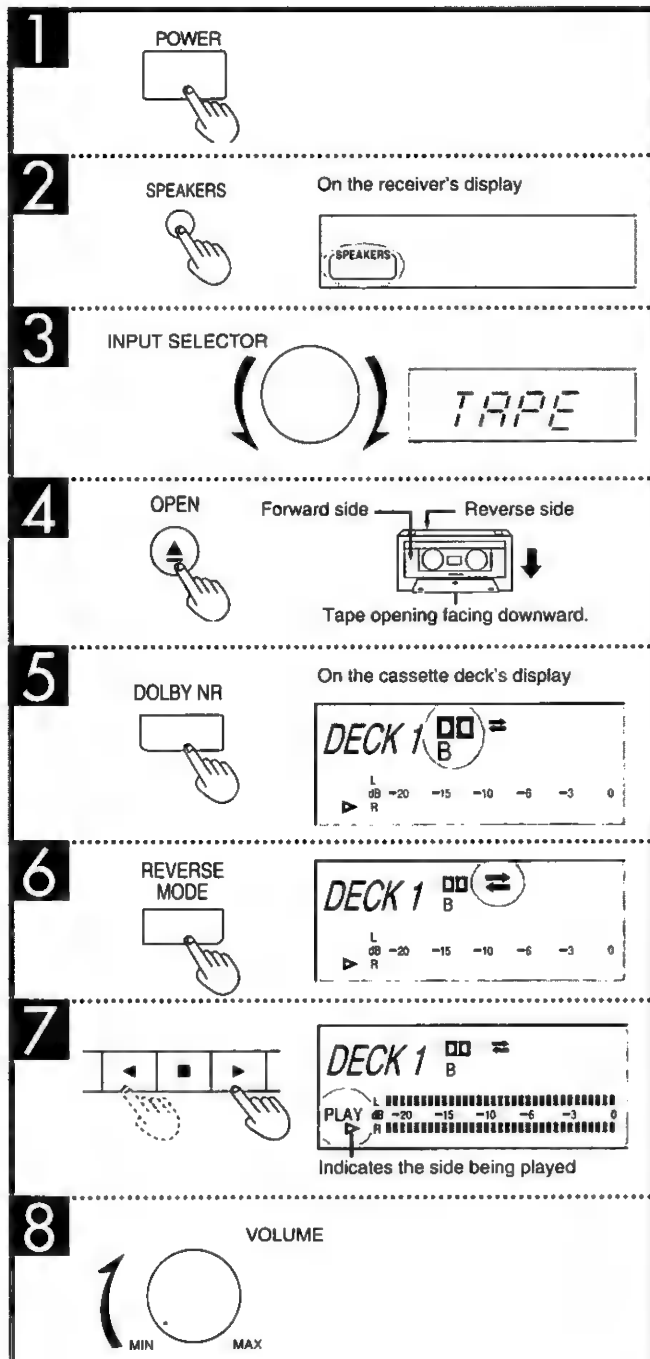
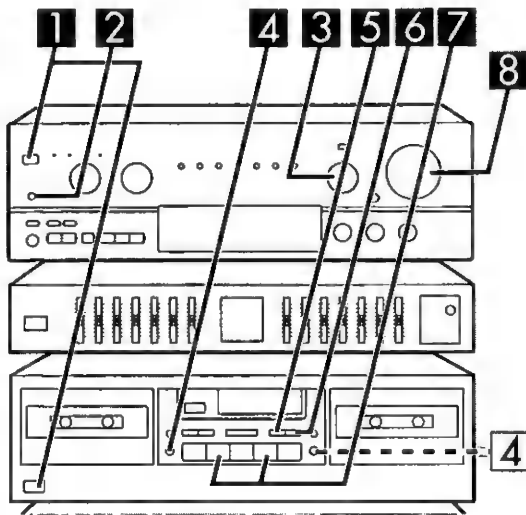
Playback will begin.

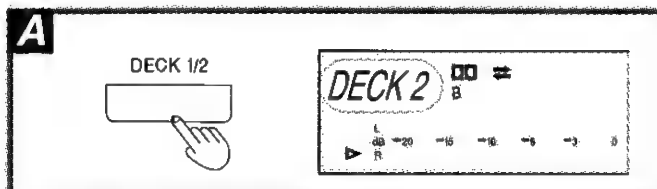
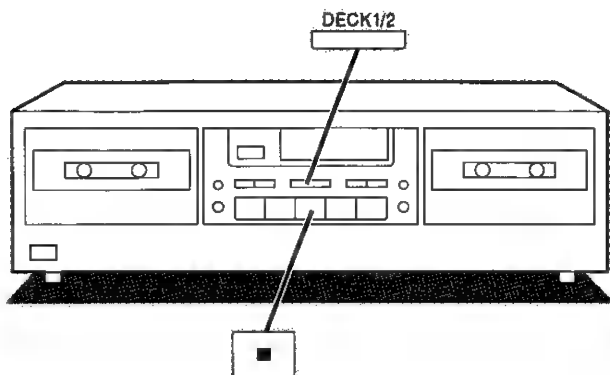
▶ : To begin from the forward side.

◀ : To begin from the reverse side.

- 8 Adjust the volume.

(Continued on next page)





Listening to cassette tapes

To stop playback

Press [■].

After listening is finished

Be sure to reduce the volume level, and switch the power to the standby condition by pressing [POWER] of the receiver.

To change the Deck to be used **A**

Press [DECK 1/2] to select the Deck you want to play.

Each time the button is pressed, the indicator will change:

DECK 1 ↔ DECK 2

The indicator changes only if a tape is loaded in the both decks.

Reverse function

The reverse function on this unit has three modes (↔, ↔↔, ↔↔↔). Read the descriptions below and select the mode as desired.

Mode	Tape travel
↔	Only one side of the tape (either the forward side or the reverse side) will be played, and operation will automatically stop when playback has been completed.
↔↔	Both sides of the tape will be played repeatedly eight times, and then operation will automatically stop. (If playback is begun from the reverse side, the forward side will be played seven times.)
↔↔↔	When there is a tape in only one of the decks Both sides of the tape will be played once, and then operation will automatically stop. (If playback is begun from the reverse side, the forward side will not be played.) When there is a tape in each of the decks The forward and reverse sides of the tape in Deck 1 will be played, followed by the forward and reverse sides of the tape in Deck 2, and after this operation is repeated eight times, operation will automatically stop. (If playback is begun from Deck 2, the tape in Deck 1 will be played seven times.)

Dolby noise-reduction system

The Dolby noise-reduction system is designed to effectively reduce the annoying high-frequency "hissing" noise which can occur with cassette tapes. During recording, the system functions to increase the high-frequency sound level, and then, during playback, that same portion is weakened to bring it back to the previous level.

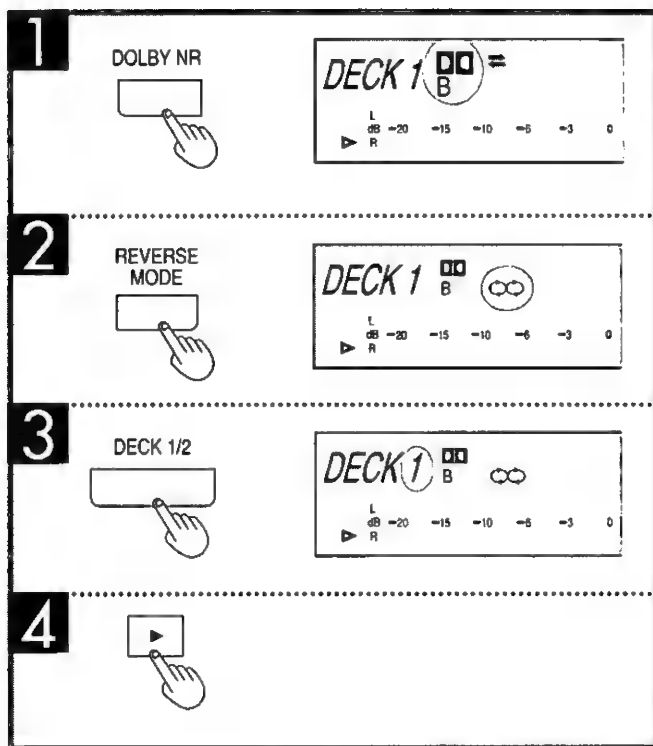
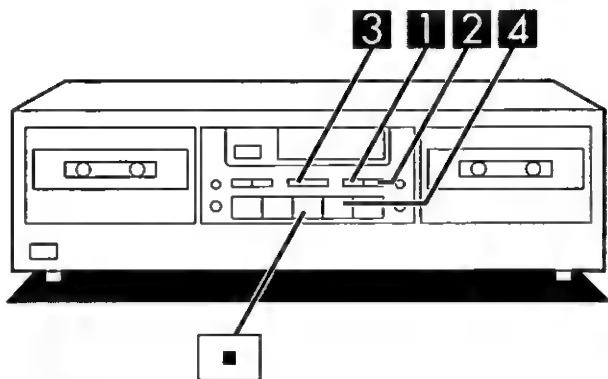
Dolby B-type noise-reduction

Noise is reduced to about one-third.

Use this system when playing back tapes recorded by the Dolby-B noise-reduction system, such as prerecorded music tapes, etc.

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.

"DOLBY" and the double-D symbol **DD** are trademarks of Dolby Laboratories Licensing Corporation.



Series playback

Both sides of the tape in Deck 1 will be played, followed by both sides of the tape in Deck 2. (Repeated up to eight times.)

Preparation

Load the tapes to be played into Deck 1 and Deck 2.

Note that for series playback it is not possible to select different types of Dolby NR for Deck 1 and Deck 2. It is recommended that you use two tapes which were recorded using the same type of Dolby NR (or both recorded without Dolby NR).

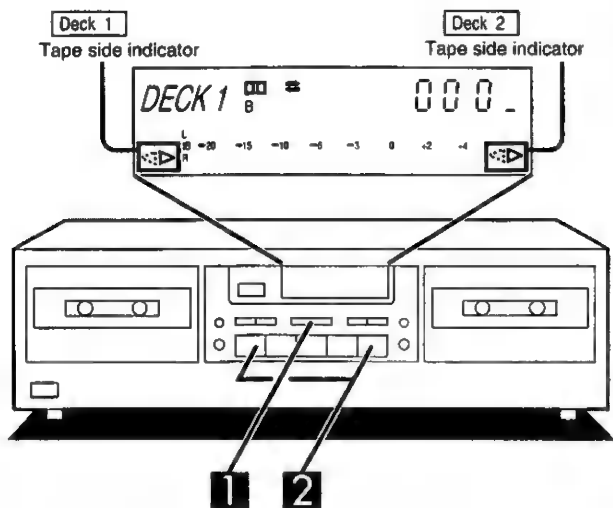
- 1** Press [DOLBY NR] to listen to tapes recorded by Dolby B-type noise-reduction.
- 2** Press [REVERSE MODE] to select the "∞" mode.
- 3** Press [DECK 1/2] to select Deck 1.
- 4** Press [▶].
Series playback will begin from the forward side of the tape in Deck 1.

To stop playback

Press [■].

For your reference:

It is also possible to begin series playback from the reverse side of the tape in Deck 1 or from Deck 2. (➡ Refer to "Reverse function" on page 32.)



To fast-forward or rewind the tape

- 1 Press [DECK 1/2] to select the Deck (1 or 2).
- 2 Press [◀◀] or [▶▶].

Because this unit is capable of playing back both sides of the tape, the operation changes in accordance with the direction of the tape side indicator.

- The tapes in Deck 1 and Deck 2 can be advanced or rewound at the same time.

Tape counter

The tape counter indicates the amount of tape travel as a numerical value based on the number of revolutions of the tape hub.

As you switch between Deck 1 and Deck 2, the tape counter shown on the display changes too.

To reset the tape counter

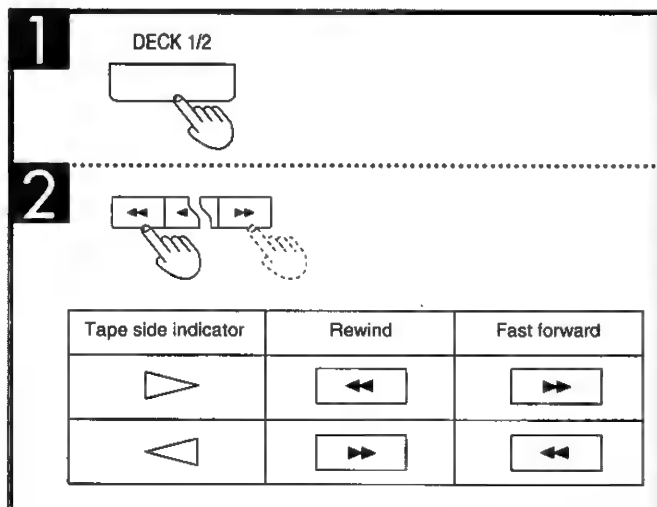
Press [COUNTER RESET].

The tape counter of the currently selected deck will revert back to "000", while that of the other deck will remain unchanged.

For your reference:

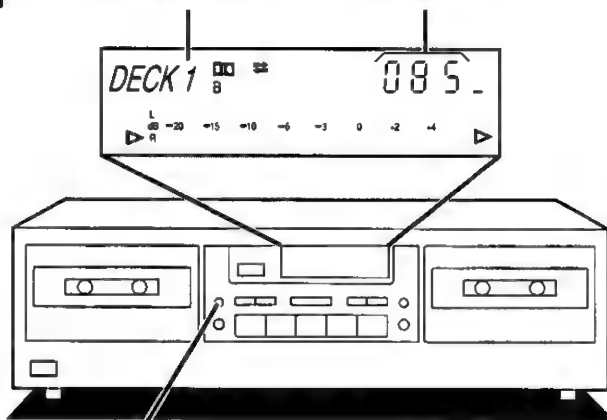
When the tape is traveling in the reverse direction, the value displayed on the tape counter will count down.

After "000" is reached, the display will switch to "999" and will then continue counting down.



Currently selected deck

Tape counter



COUNTER
RESET

COUNTER
RESET

Other functions

To adjust the tone quality

Turn [BASS] to adjust the low frequency sound.
Turn [TREBLE] to adjust the high frequency sound.

To adjust the sound balance

Turn [BALANCE] to adjust the left/right sound balance.
This will not adjust the left/right volume balance of the surround speakers.

To mute the sound level

by remote control only

Press [MUTING].

The message "MUTING ON NOW" runs repeatedly from right to left across the display as long as the muting function is on.

Press once again to return to the previous volume level.

Note

When the receiver is turned off, the muting operation will be automatically cancelled.

To enjoy external sources

Turn [INPUT SELECTOR] to select and start the desired source.

(Refer to the appropriate operating instructions for details.)

VCR : To watch video tapes

TV/DSS: To watch TV or DSS

DVD : To watch DVD

PHONO: To listen to phono discs

To listen through headphones

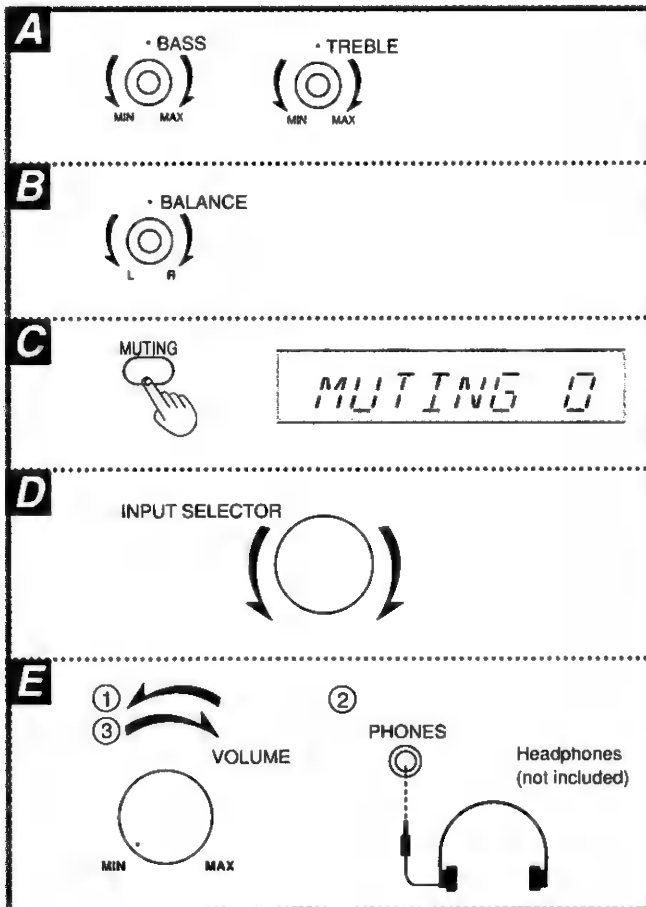
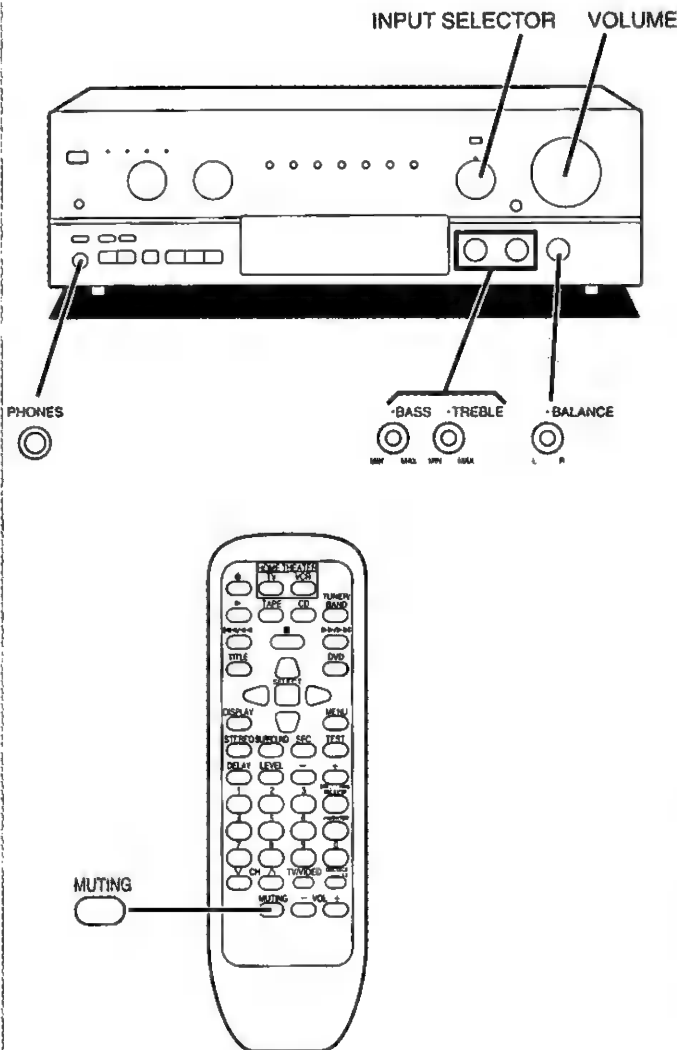
- ① Reduce the volume level.
- ② Connect the headphones.
Plug type: 6.3 mm (1/4 in.) stereo
- ③ Adjust the volume level.

If you do not want sound from the speakers, press [SPEAKERS] and check the speaker indicator goes out.

If a subwoofer is connected to your system, turn off the power to it (or the subwoofer amp you are using) or lower the volume to the minimum level.

Note

Avoid listening for prolonged periods of time to prevent hearing damage.



Tape monitor

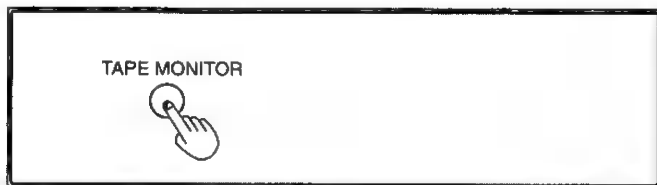
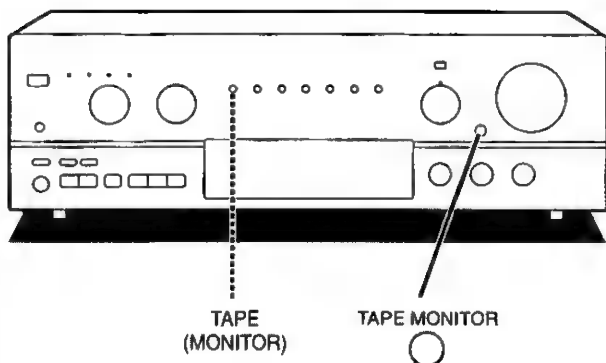
The tape monitor can be used to check the sound as it is recorded if a 3 head tape deck (not included) is connected.

If [TAPE MONITOR] is pressed while a source other than "TAPE (MONITOR)" is selected, the "TAPE (MONITOR)" indicator lights and the tape monitor comes on.

Sources other than tape can still be selected with [INPUT SELECTOR] while the "TAPE (MONITOR)" indicator is on.

Press [TAPE MONITOR] again to turn the tape monitor off.

Leave the tape monitor off when using the tape deck included with this system.



TAPE MONITOR



Making a recording

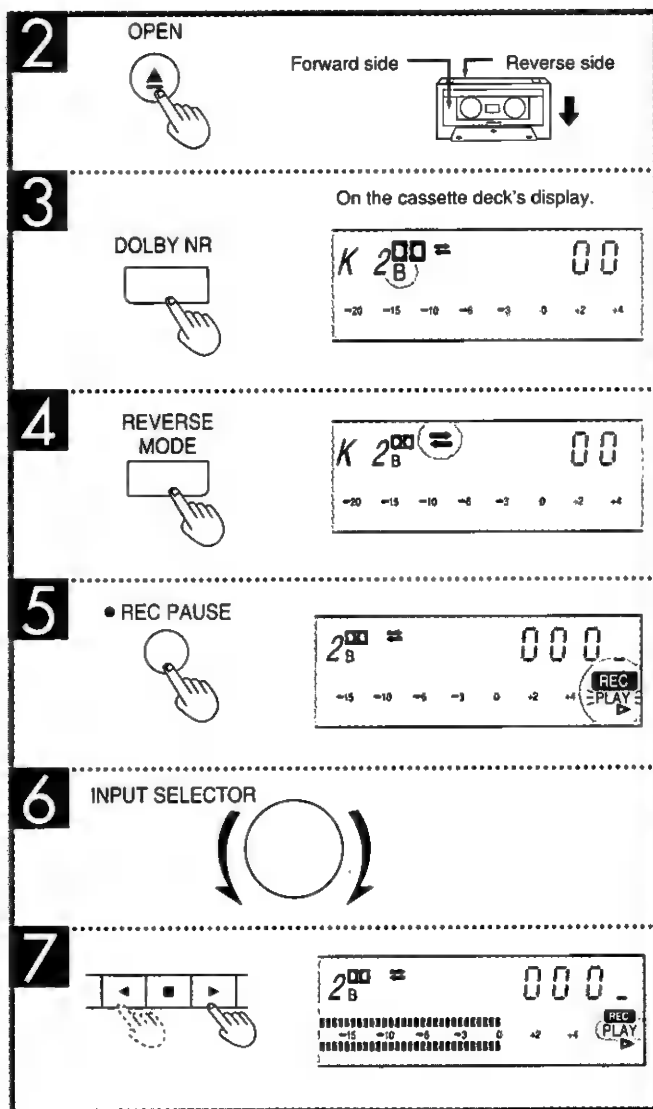
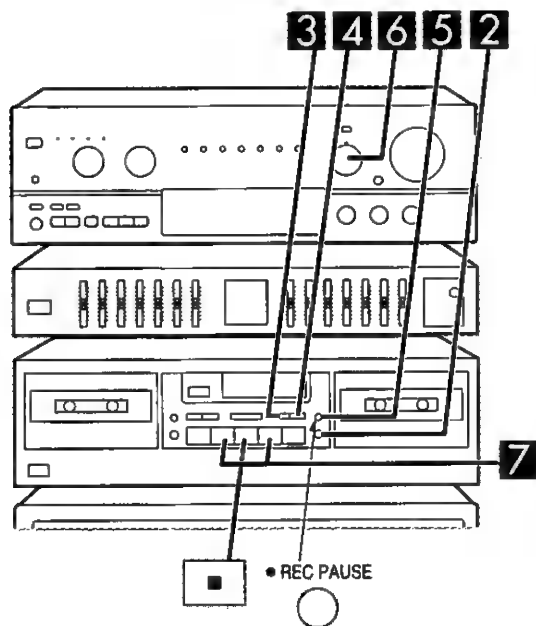
Recording from the radio or external source (Deck 2 only)

Types of tapes which can be used for recording:

Normal position/TYPE I	OK
High position/TYPE II	OK
Metal position/TYPE IV	OK

Preparation

Wind the tape past the leader tape section so that recording can begin straight away.



- 1 Turn on the power of the systems.
- 2 Press [**▲ OPEN**] on Deck 2, and then insert the cassette tape.
Close the cassette holder by hand.
- 3 Press [**DOLBY NR**] to record by Dolby B-type noise-reduction system.
When recording a tape without using a Dolby NR system, press so that the indicators go off.
- 4 Press [**REVERSE MODE**] to select the desired reverse mode.
Each time the button is pressed, the indicator will change in the order:
 - : Only one side will be recorded, and then operation will automatically stop.
 - , : Both sides (the forward side first, and then the reverse side) will be recorded, and then operation will automatically stop.
- 5 Press [**● REC PAUSE**].
The unit will be in the recording standby mode.
- 6 Turn [**INPUT SELECTOR**] to select the desired source to be recorded.
Any source can be selected except TAPE.
- 7 Press [**▶**] (or [**◀**]) to begin recording, and play the source to be recorded.
 - ▶** : To begin recording from the forward side.
 - ◀** : To begin recording from the reverse side.

Note

When recording on both sides of the tape, be sure to press [**▶**].

To stop recording

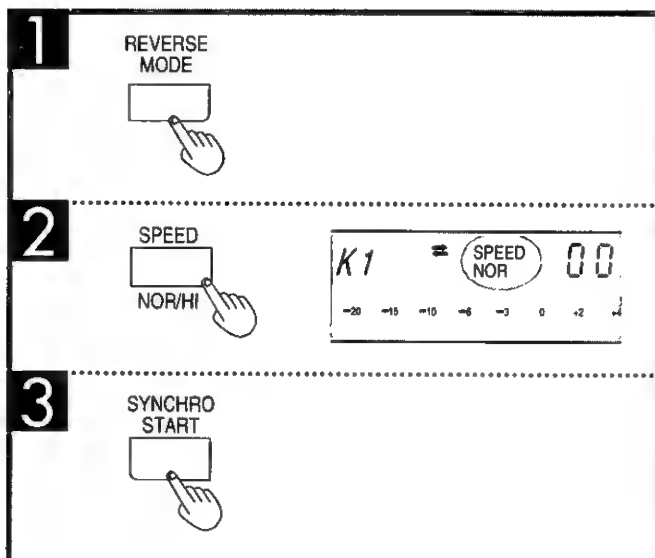
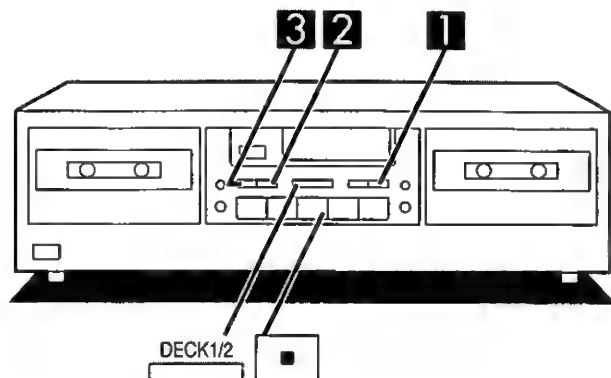
Press [**■**].

To temporarily stop recording

Press [**● REC PAUSE**].

To resume recording

Press either [**◀**] or [**▶**], corresponding to the side of the tape side indicator ("◀" or "▶") which is lit.



Making a recording

Tape-to-tape recording

Use Deck 2 to record the sound being played back on Deck 1.

Preparation

Load tapes which have been advanced to the end of the leader tape into both decks.

Deck 1: For playback Deck 2: For recording

1 Press [REVERSE MODE] to select the desired reverse mode.

Each time the button is pressed, the indicator will change in the order:



- : Only one side of the tape will be recorded, and then operation will automatically stop.
- ↔ : Both sides of the tape (first the forward side and then the reverse side) will be recorded, and then operation will automatically stop.
- ↻ : If the recording tape is longer than the playback tape, the playback tape will be played repeatedly as many as eight times until the recording tape is finished.
- ↻ : Both sides of the tape (first the forward side and then the reverse side) will be recorded once, and then operation will automatically stop.

Note

To record on only one side of the tape, set the tape side indicators ("◁" or "▷") on Deck 1 and Deck 2 in accordance with the tape sides to be played back and recorded.

To record on both sides of the tape, set the tape side indicators on both Deck 1 and Deck 2 to the forward side (▷).

2 Press [SPEED] to select the recording speed.

Each time the button is pressed, the indicators will change in the order: NOR → HI → (off).

NOR: normal speed

HI: approx. double speed

3 Press [SYNCHRO START].

Recording will begin.

To stop recording

1. Press [DECK 1/2] to select Deck 2.
2. Press [■].

Note

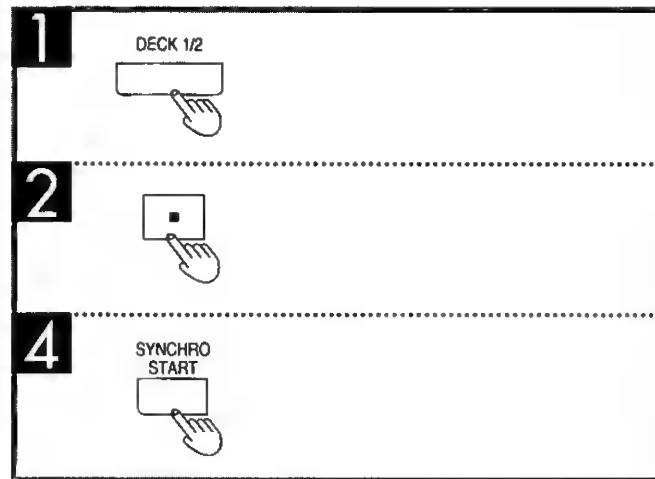
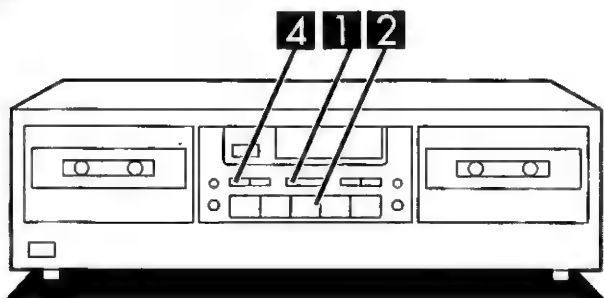
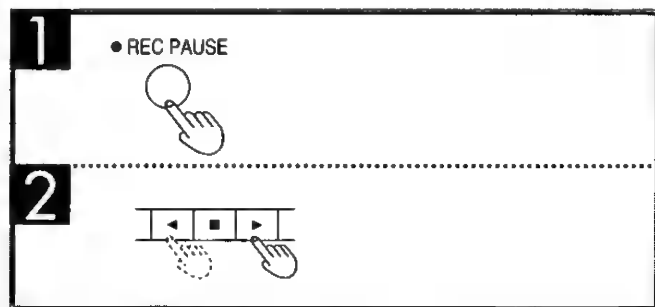
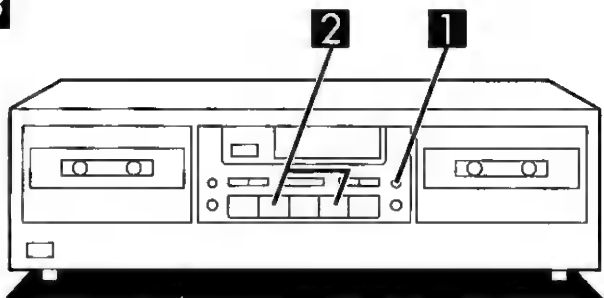
In order to avoid operation errors later, be sure to switch off the [SPEED] button (the "NOR" and "HI" indicator will go out) after the tape-to-tape recording has finished.

For your reference:

- The Dolby effects will be recorded as they are on the tape being played back.
- Because the signal being recorded from Deck 1 onto Deck 2 does not pass through the amplifier, it is possible to change the setting of the amplifier's input selector during recording in order to listen to some other sound source.

Note

- When recording with the recording speed set to hi-speed, noise interference may be recorded onto the tape if there is a television set nearby, so make the recording in a location separated from the television set or switch off the television set during recording.
- Noise reduction does not work during playback of tape-to-tape recordings. If the tape was recorded with noise reduction, listen at low treble. Lower the treble with the receiver's treble control before playback.

A**B**

Making a recording

To record selected tracks **A**

- 1** [During recording]
Press [DECK 1/2] to select Deck 1.
- 2** Press [■].
Deck 1 will stop, and Deck 2 will record a 4-second silent interval and then enter the recording standby mode.
- 3** Operate Deck 1 to find the track you wish to record.
It is also possible to change the playback tape at this time.
- 4** Press [SYNCHRO START].
Recording will resume.

To cut unwanted parts during recording **B**

- 1** Press [● REC PAUSE] during recording.
Deck 2, which was recording, will enter the pause mode, and Deck 1 will continue playback.
(If you were recording at hi-speed, Deck 1 will change to normal speed while Deck 2 is on pause, but will return to hi-speed when you resume recording.)
- 2** [When Deck 1 reaches a part you wish to record]
Press either [◀] or [▶], corresponding to the tape side indicator which is lit.
Deck 2 will resume recording.

To make blank tapes (Deck 2 only)

1. Switch the amplifier to an input source which is not being used.
2. Insert the recorded tape into DECK 2.
3. Press [DOLBY NR] so that the Dolby NR indicator is off.
4. Press [REVERSE MODE] to select reverse mode.
5. Press [● REC PAUSE].
6. Press [◀] or [▶], whichever side you want to erase.

Note

To erase both sides of the tape, be sure to press [▶].

To record on a VCR

You can record audio and video sources on a VCR when it is connected to the "VCR" terminals on the receiver.

1. Switch the receiver to the input source that you want to record.

Note

Recording from the tape deck is not possible.

2. Begin recording on the VCR and start the desired source.
(Refer to the appropriate operating instructions for details.)

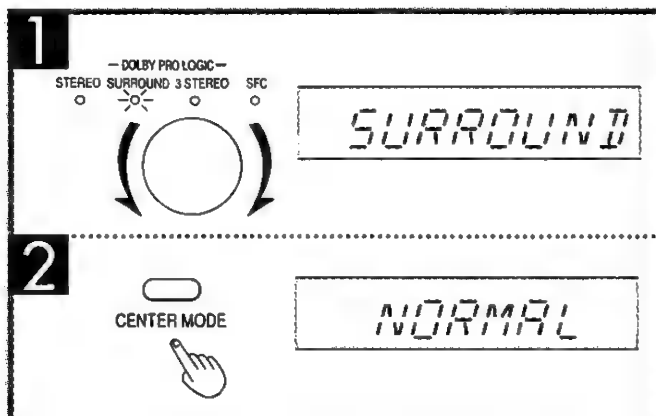
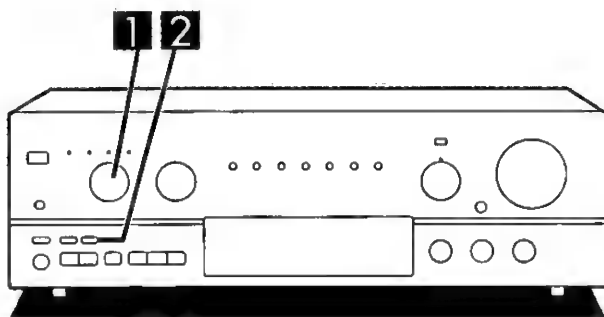
Note

When you select DVD 6CH INPUT mode, only sound from the front left and right speakers is recorded.

To record all 6 channels

Set the playback mode on your DVD player or decoder to 2 channel (stereo) mode.

For details, see the instruction manual that came with the connected equipment.



Setting the center mode and adjusting speaker output level

- When ready to adjust speaker output level, situate yourself where you would normally be listening.
- First turn ON the speakers with [SPEAKERS] on the receiver.
- If front speaker volume is unbalanced, adjust the balance with [BALANCE].

The following steps are for setting the output level of the front speakers and the center/surround speakers to the same listening level.

1 Turn the sound mode selector to select "SURROUND".

2 Press [CENTER MODE] to select "NORMAL".
When the button is pressed, the current center mode is displayed.

Pressing it again changes the center mode.

If you buy new speakers for this system, select the center mode to suit the type of speakers.

NORMAL

When the center speaker is smaller than the front speakers.

WIDEBAND

When the center speaker is the same size as or larger than the front speakers.

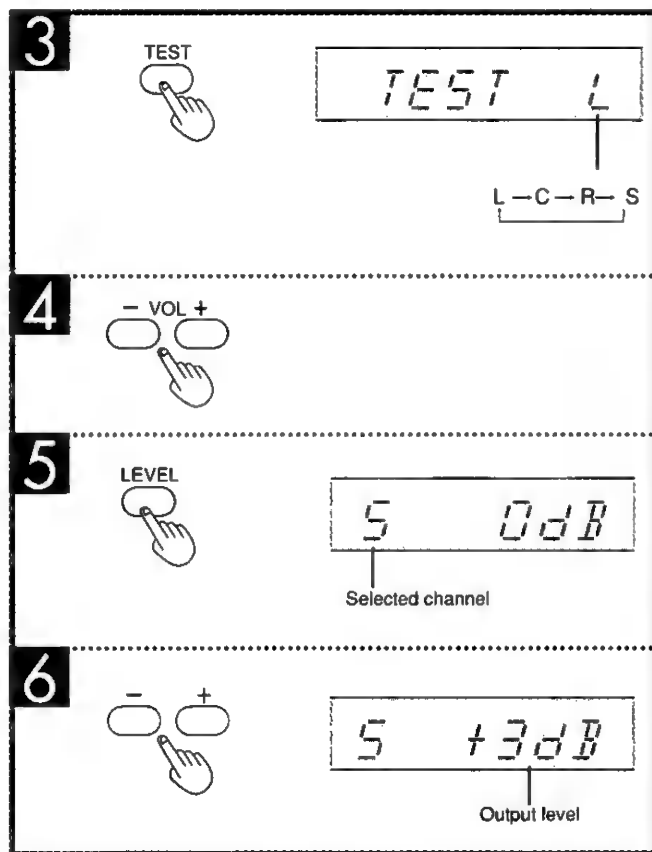
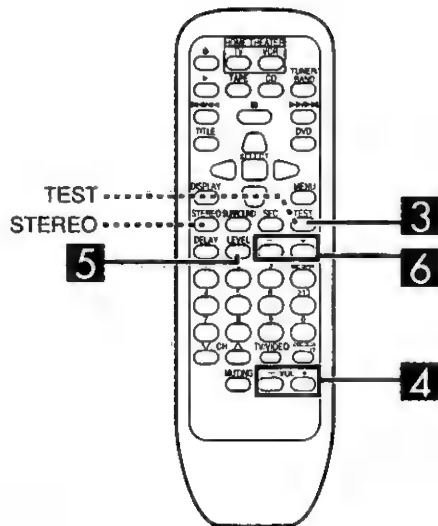
PHANTOM

When no center speaker is connected.

Note

In the PHANTOM mode, the sound which would have been sent to the center speaker will be divided equally between both the left and right front speakers.

(Continued on next page)



3 by remote control only

Press [TEST] to output a test signal.

The speaker outputting the test signal is displayed while the test is running.

L: Front speaker (Left)
C: Center speaker
R: Front speaker (Right)
S: Surround speakers

The subwoofer is muted while testing.

In the PHANTOM mode, the center speaker is OFF, so there is no center test signal and "C" is not displayed.

4 by remote control only

Press [VOL (-) or (+)] to set the volume level normally used for enjoying the source.

5 by remote control

Press [LEVEL] to select the center or surround speakers.

6 by remote control only

Press [-] or [+] to adjust the output level.

Adjust the output level of each speaker from the listening position until they are all identical.

-: Decrease the output level.

+: Increase the output level.

Output level can be varied within a range of -12 dB to +12 dB with front speaker output level serving as the zero point.

Note

During steps 5 and 6 above the test signal sequence is interrupted and the signal will only come from the selected speaker.

The sequence will resume when adjustments are stopped.

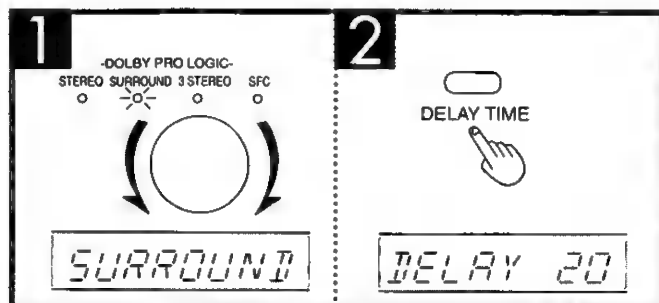
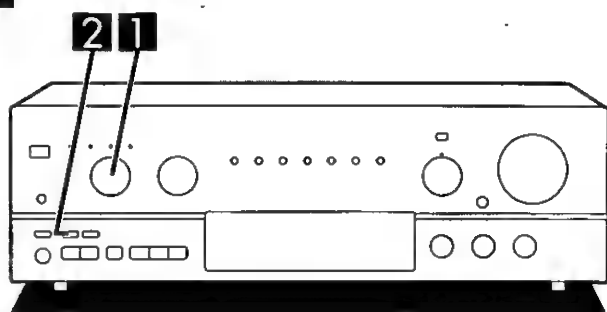
To stop the test signal

Press [TEST].

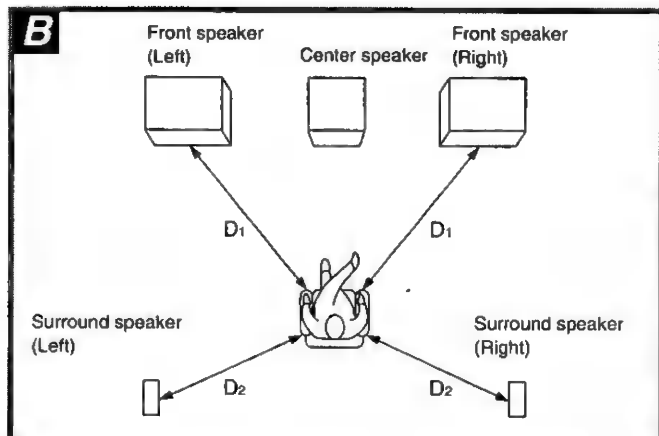
To turn off the Dolby Pro Logic systems

Press [STEREO].

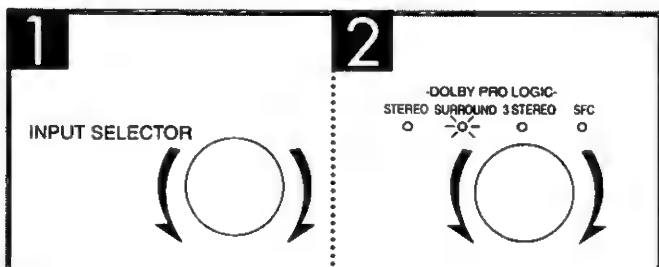
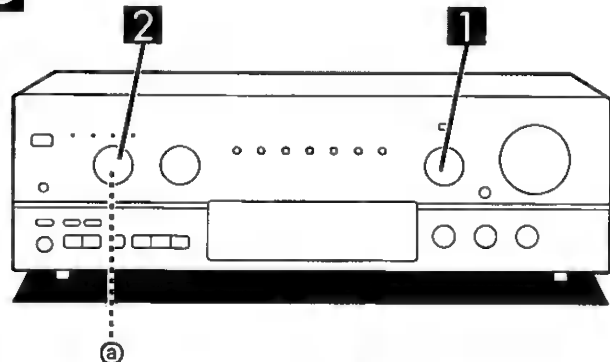
A



B



C



Adjusting the delay time

A

When enjoying with SURROUND only

Adjust the sound from the surround speakers until the proper effect is produced.

1 Turn the sound mode selector to select "SURROUND".

2 Press [DELAY TIME] to set the time.
When the button is pressed, the current delay time is displayed.
Each time the button is pressed, the delay time will increase by 5 ms within a range of 15 ms to 30 ms.

The standard setting is 20 ms.

To calculate the delay time

D₁: Distance from front speakers

D₂: Distance from surround speakers

- If D₁ is equal to or less than D₂
Set to 15 ms.
- If D₂ is less than D₁
Start at 15 ms and increase by 5 ms for every 1.5 m of difference between D₁ and D₂.

Enjoying SURROUND or 3 STEREO

C

1 Turn [INPUT SELECTOR] to select and start the desired source.

2 Turn the sound mode selector to select "SURROUND" or "3 STEREO".

Note

When employing SURROUND, use software recorded in Dolby Surround.

For your reference

You can set the Dolby Pro Logic mode for each source.
Each source will retain the selected mode.

To turn off the Dolby Pro Logic systems

Turn the sound mode selector (a) to select STEREO.

Manufactured under license from Dolby Laboratories Licensing Corporation.

DOLBY, the double-D symbol  and "PRO LOGIC" are trademarks of Dolby Laboratories Licensing Corporation.

SFC (Sound Field Control)

The SFC function gives presence and spread thereby enhancing and enriching the music or movie.

Read the following explanations in order to better understand how to make your selection.

Note

The center speaker is not used in the hall, and simulated modes.

HALL

This mode imparts a reflection and spread which will make you feel as if you are in a large concert hall.

CLUB

Like a jazz club, this mode provides an exciting and intimate atmosphere. It simulates the sound field of a relatively small room having a low ceiling and hard reflective surfaces, for a "live" sound with enhanced presence to bring the performers up close.

LIVE

Primarily for vocal pieces, this mode adds gloss to the vocals and you'll feel as though you were hearing a live stage performance.

THEATER

You can clearly perceive the directions and source of the movie. Real ambience of sound can also be recreated naturally using this mode.

THEATER mode can be used with stereo sources not encoded with Dolby Surround.

Note

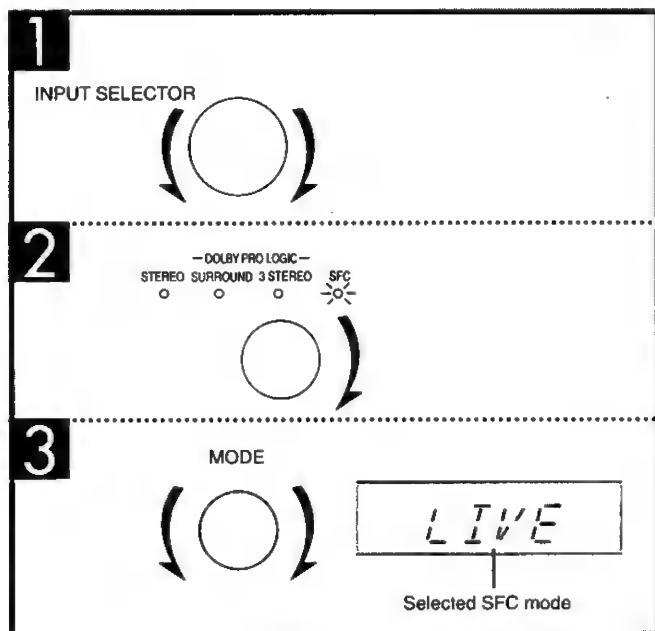
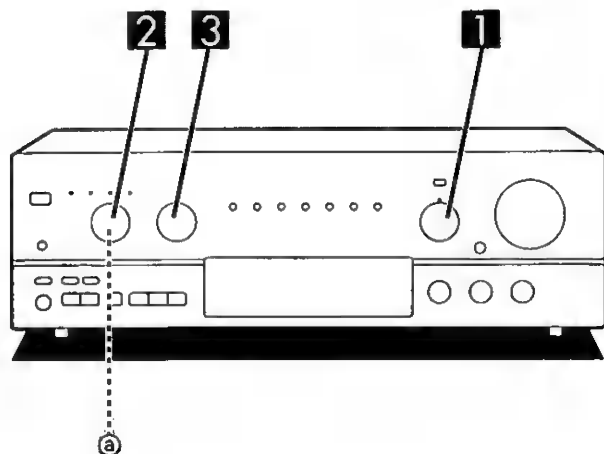
When using Dolby Surround encoded materials, select "SURROUND".

SIMULATED (SIM SURR)

Choose this mode if little or no sound will be heard from the surround speakers.

You can feel as if you were in a more expanded space adding to the actual sound from the source.

This mode also adds effect to monaural sources by outputting sound from surround speakers.



1 Turn [INPUT SELECTOR] to select and start the desired source.

2 Turn the sound mode selector to select "SFC".

3 Turn [MODE] to select the desired SFC mode.

Note

The SFC mode can also be selected by directly turning [MODE] in step 2 instead of selecting "SFC".

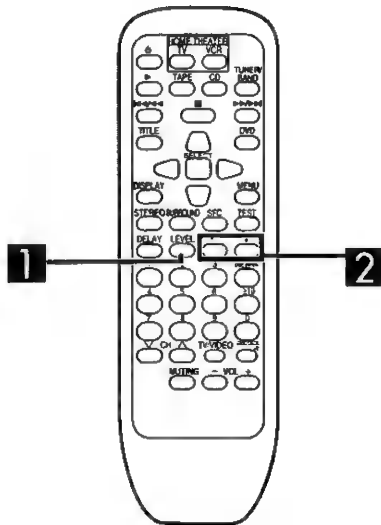
For your reference

You can set the SFC mode for each source except DVD 6CH. Each source will retain the selected mode.

To turn off the SFC function

Turn the sound mode selector (a) to select "STEREO".

A



Adjusting field of sound

With this unit, you can adjust speaker volume.
Adjust the field of sound while listening to a source.

To adjust the volume of the center and surround speakers

A

by remote control only

- 1 Press [LEVEL] to select the center or surround speakers.

Note

You can adjust the center speaker volume only in the theater mode.

- 2 Press [+] or [-] to adjust the output level.

To adjust the delay time B

Press [DELAY TIME] to set the time.

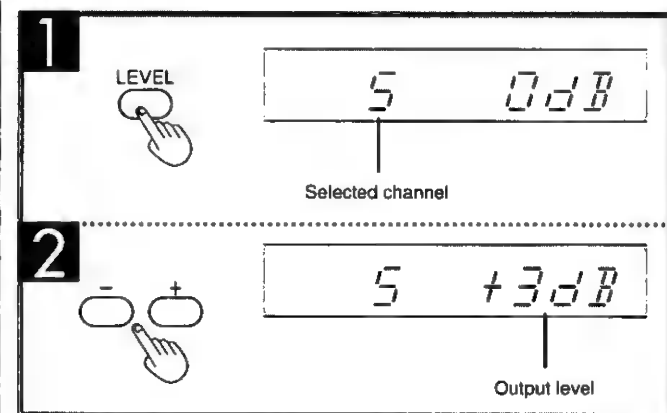
When the button is pressed, the current delay time is displayed.
Each time the button is pressed, the delay time will change.

The delay time increments are different depending on the SFC mode.

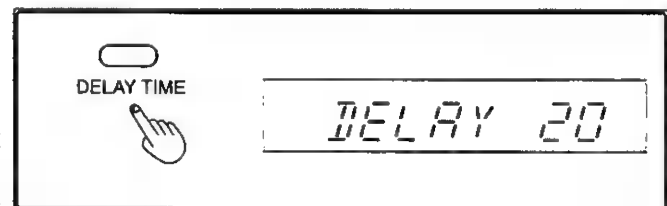
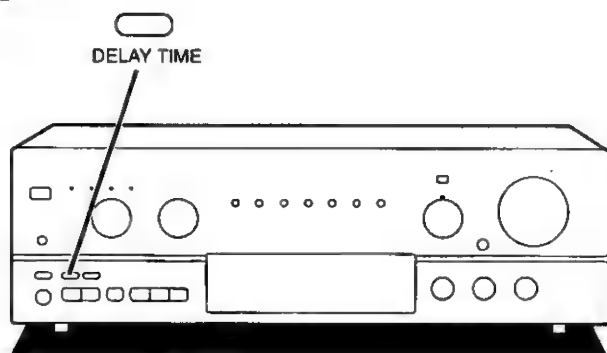
Select a delay time setting to accommodate to your individual needs.

SFC modes	Available delay time setting (ms)
HALL	20, 25, 30, 40 , 50
CLUB	0, 15 , 20, 25, 30
LIVE	15, 20, 30, 40, 50
THEATER	15, 20 , 25, 30, 40
SIMULATED	15 , 20, 25, 30, 40

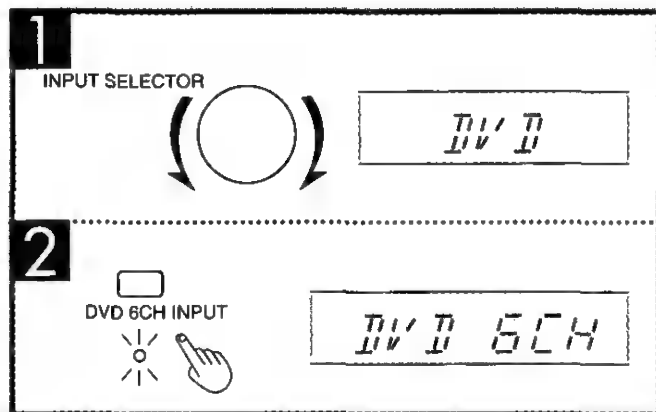
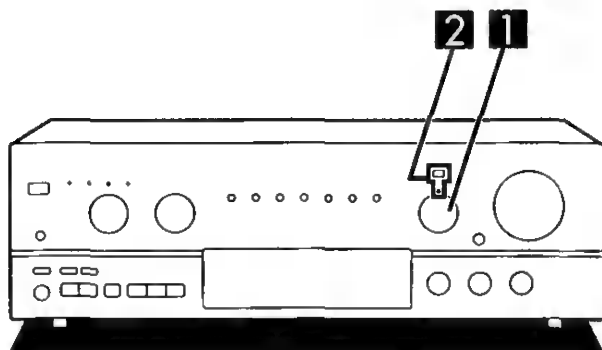
The figures in bold italics are the factory settings.



B



DVD 6CH INPUT mode



This receiver can playback 6 channel discrete sound. It has terminals for connecting to a component with 6 channel discrete output, such as a DVD player.

6 channel discrete output makes playback sound more real by adding depth, movement, position and other characteristics to the field of sound. It will make you feel as if you were at the movie theater when in your own home.

To enjoy 6 channel discrete output sound

You have to connect a DVD player, Digital Surround Processor or other component that has 6 channel discrete output capabilities. (→ Page 9.)

1 Turn [INPUT SELECTOR] to select "DVD".

2 Press [DVD 6CH INPUT] to select "DVD 6CH".
Changes as follows, each time the button is pressed.
DVD 6CH ⇄ DVD (2CH)

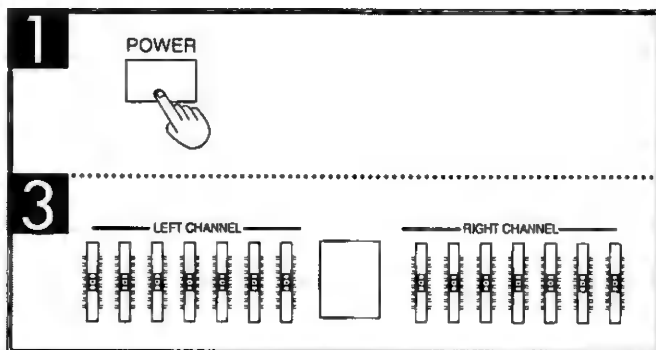
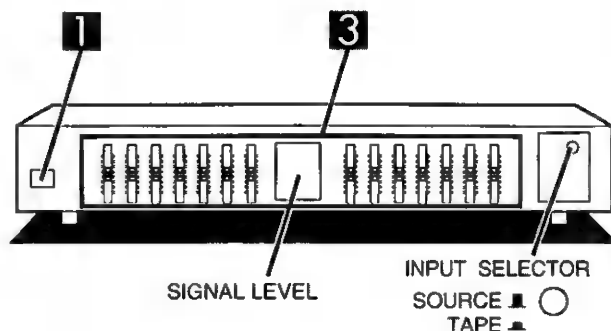
The "DVD 6CH INPUT" indicator lights when "DVD 6CH" is selected.

If you press this button while another source (CD, PHONO, etc.) is selected, the amplifier switches the source to DVD and engages the DVD 6CH INPUT mode.

3 Start the desired source.
Follow your equipment's operating instructions.

Note

You cannot select Dolby Pro Logic or any of the SFC modes while in the DVD 6CH INPUT mode.



Using the graphic equalizer

Adjusting the tone quality

Preparation

- Turn Dolby Pro Logic and the SFC mode OFF.
- Set the [TREBLE] and [BASS] of the receiver to their center positions.

- 1 Press [POWER] of the graphic equalizer.
The graphic equalizer will switch on.
- 2 Start the desired source.
The left and right input levels will be displayed.
- 3 Adjust the left and/or right channel tone quality as desired. (See page 47.)

Caution

As with any equalizer, it is not recommended to raise adjacent equalizer level controls by a large amount. This may cause receiver clipping, distortion, or damage to the speakers. It is more effective to raise one equalizer level control and lower the ones on either side, especially if you want to emphasize a particular sound like a drum.

To bypass the graphic equalizer

Press [POWER] to switch off the graphic equalizer.

To use a second tape deck connected to the graphic equalizer

For detailed information concerning tape deck operation, please read the operating instructions for each unit carefully.

To start the tape playback

1. Set [INPUT SELECTOR] of the graphic equalizer to the "TAPE" position.
2. Start the tape playback.

Note

Be sure to set [INPUT SELECTOR] to the "SOURCE" position to listen to other sources.

To record on the tape deck with equalizer correction

This only works for the tape decks, etc., connected to the graphic equalizer.

1. Set [INPUT SELECTOR] to the "SOURCE" position.
2. Adjust the tone quality as desired.
3. Start recording on the tape deck and then start the desired source to be recorded.

Characteristics of each frequency range

The following are examples of typical applications with regards to the equalizer band settings.

These statements are used in a general manner of speaking and may not hold true in all cases.

63 Hz Deep bass range

The sounds of the bass, drums, etc. are dramatically strengthened.

160 Hz Bass range

This range provides the sounds of the saxophone, trombone, etc. sounds can be clarified, if indistinct, by reducing this setting.

400 Hz Mid-bass range (the fundamental range for music)

This control can be used to reinforce the sounds of male vocals, etc.

1 kHz Mid-range

This control can be used to add clear presence and realism to female vocals, etc.

2.5 kHz Mid-high range

This range provides clarity and color variations to stringed instruments, etc.

6.3 kHz Treble range

This control can be used to brighten the sounds of the flute and similar instruments. If sounds seem too jarring, softness can be applied by reducing the setting.

16 kHz Super-treble range

This control can be used to provide an extra measure of delicate vibration to the sounds of the cymbals, triangle, etc. If tape "hiss" noises are annoying, this control's setting can be reduced to alleviate such noises.

Examples of applications

By using the seven band-level controls, various corrections of the sound field and tone quality are possible.

For creation of a sound field in the listening room.

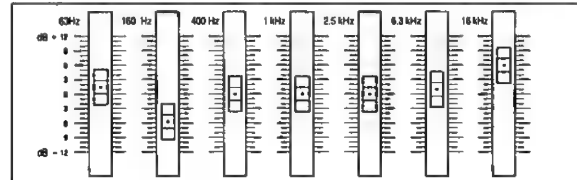
Correcting room acoustics

Each room has its own particular effects on frequency characteristics. These effects are determined by a number of conditions, such as room size, furnishings, etc.

The 7 separate divisions of the band level control on this unit make it possible to selectively correct only the frequency ranges necessary to suit the conditions of each listening room.

An example of room acoustics correction

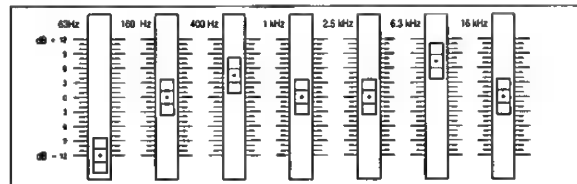
In order to correct the peaks and dips in bass sounds caused by reflection, reduce the 160 Hz level 4-6 dB and then, raise the level of sounds below 63 Hz and above 6.3 kHz vicinity slightly.



For editing "live" recordings made on tape, etc.

Cutting the noise from live recording tapes

Live tapes recorded outdoors generally contain popping noises caused by wind and various other noises from the surrounding area. In order to effectively eliminate wind noise, cut bass sounds below 63 Hz and raise the level of sounds in the 400 Hz range. Then control sounds made by birds, etc., with a 6.3 kHz adjustment.



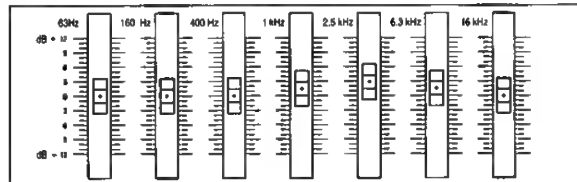
For creation of unique, individually personalized sounds.

Producing clear vocals

For female vocals, raise the level of the 1 kHz-2.5 kHz range by 2-4 dB. To rectify omission, raise the level of the 6.3 kHz vicinity slightly.

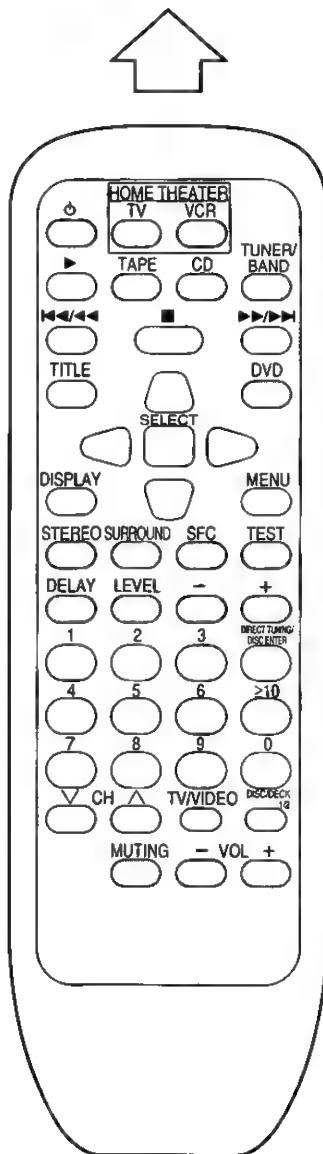
Male vocals can be improved by raising the level of the 400 Hz-2.5 kHz range.

Below is an example of a female vocal correction



To operate the receiver

Point the remote control toward the receiver



To turn the receiver ON/OFF

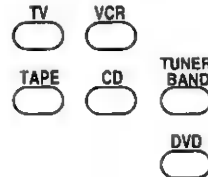


Once the unit has been set to ON, it can be turned ON and OFF simply by pressing [⏻].

Note

After turning the TV, VCR or DVD player ON or OFF, always press TUNER/BAND before pressing [⏻] when turning the receiver ON and OFF.

To select an input source and switch the remote control transmitter to each operation mode



Note

PHONO can not be selected with this remote control.

To turn off the Dolby Pro Logic and SFC mode



To turn on the Dolby Pro Logic SURROUND mode



Note

3 STEREO can not be selected with this remote control.

To turn on the SFC function and select the desired mode



Changes as follows each time the button is pressed.

HALL -- CLUB -- LIVE -- THEATER
└ SIM SURR (SIMULATED) ┘

To output a test signal



When the SURROUND or 3 STEREO mode is ON

Press once more to stop the signal.

To adjust the output level of the center speaker and/or surround speakers



- ① Select center (C) or surround (S).
- ② Adjust output level.

- When the SURROUND mode is ON and the center mode is on PHANTOM, you cannot select the center channel.
- When SFC is used, the center mode can be changed only if THEATER is on.
- When the 3 STEREO mode is ON, you cannot select the surround channel.

To adjust the delay time



When the SURROUND or SFC mode is ON

To mute the sound level




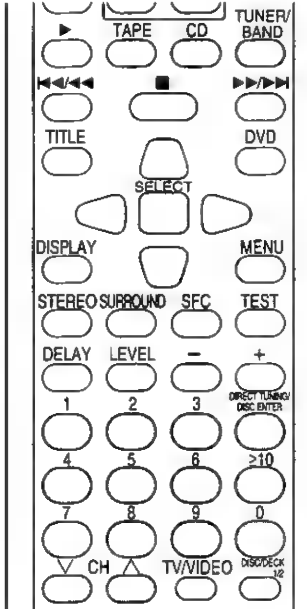


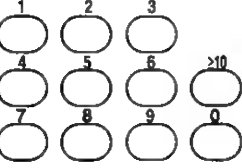
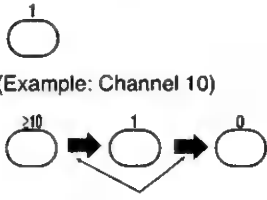
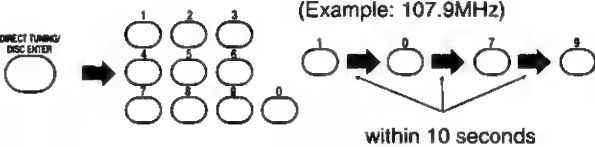


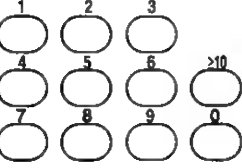
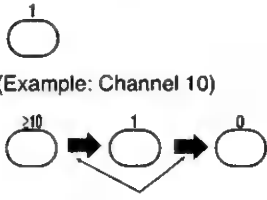
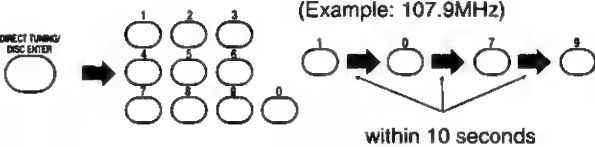


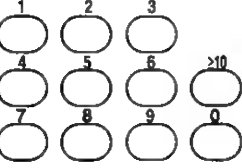
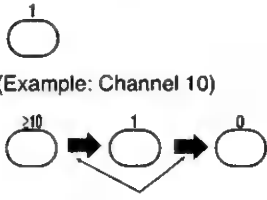
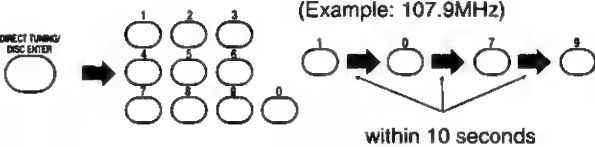
The message "MUTING ON NOW" runs repeatedly from right to left across the display as long as the muting function is on. Press once more to return to the original volume.

To adjust the volume level



To operate the receiver (continued)


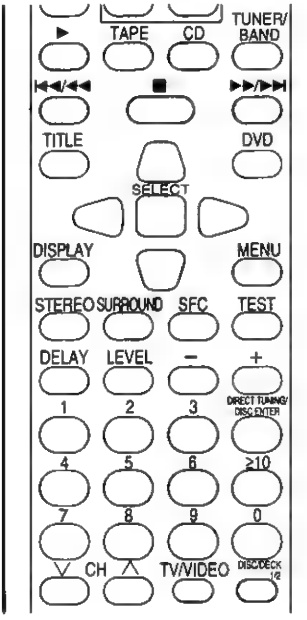












Make sure the remote control is in the tuner operation mode. (⇒ Page 48.)

<p>Point the remote control toward the receiver</p>  	<h3>To listen to radio broadcasts</h3> <table border="1"> <tr> <td data-bbox="557 275 881 415"> To select "FM" or "AM" </td><td data-bbox="881 275 1497 415">  <p>Change as follows each time the button is pressed. FM ⇌ AM</p> </td></tr> <tr> <td data-bbox="557 415 881 556"> To select the desired channel sequentially (Preset tuning) </td><td data-bbox="881 415 1497 556">  </td></tr> <tr> <td data-bbox="557 556 881 835"> To select the desired channel directly (Preset tuning) </td><td data-bbox="881 556 1497 835"> <p>(Example: Channel 1)</p>  <p>(Example: Channel 10)</p>  <p>within 10 seconds</p> </td></tr> <tr> <td data-bbox="557 835 881 1045"> To select radio stations by frequency (Direct tuning) </td><td data-bbox="881 835 1497 1045"> <p>(Example: 107.9MHz)</p>  <p>within 10 seconds</p> </td></tr> </table>	To select "FM" or "AM"	 <p>Change as follows each time the button is pressed. FM ⇌ AM</p>	To select the desired channel sequentially (Preset tuning)		To select the desired channel directly (Preset tuning)	<p>(Example: Channel 1)</p>  <p>(Example: Channel 10)</p>  <p>within 10 seconds</p>	To select radio stations by frequency (Direct tuning)	<p>(Example: 107.9MHz)</p>  <p>within 10 seconds</p>
To select "FM" or "AM"	 <p>Change as follows each time the button is pressed. FM ⇌ AM</p>								
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To select the desired channel directly (Preset tuning)	<p>(Example: Channel 1)</p>  <p>(Example: Channel 10)</p>  <p>within 10 seconds</p>								
To select radio stations by frequency (Direct tuning)	<p>(Example: 107.9MHz)</p>  <p>within 10 seconds</p>								

To listen to cassette tapes

Turn the cassette deck ON before trying to operate it by remote control.

Make sure the remote control is in the cassette deck operation mode. (⇒ Page 48.)

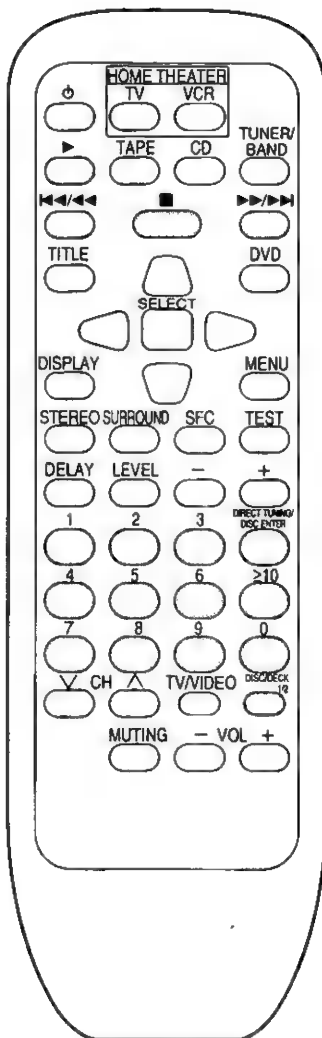
<p>Point the remote control toward the cassette deck</p>  	<table border="1"> <tr> <td data-bbox="557 1201 881 1318"> To select the tape deck (DECK 1/DECK 2) </td><td data-bbox="881 1201 1518 1318">  </td></tr> <tr> <td data-bbox="557 1318 881 1444"> To start playback </td><td data-bbox="881 1318 1518 1444">  </td></tr> <tr> <td data-bbox="557 1444 881 1591"> To fast-forward or rewind the tape </td><td data-bbox="881 1444 1518 1591"> <p>While the tape is stopped</p>  </td></tr> <tr> <td data-bbox="557 1591 881 2018"> To stop playback </td><td data-bbox="881 1591 1518 2018">  </td></tr> </table>	To select the tape deck (DECK 1/DECK 2)		To start playback		To fast-forward or rewind the tape	<p>While the tape is stopped</p> 	To stop playback	
To select the tape deck (DECK 1/DECK 2)									
To start playback									
To fast-forward or rewind the tape	<p>While the tape is stopped</p> 								
To stop playback									

To operate a CD changer

Turn the CD changer ON before trying to operate it by remote control.

Make sure the remote control is in the CD changer operation mode. (⇒ Page 48.)

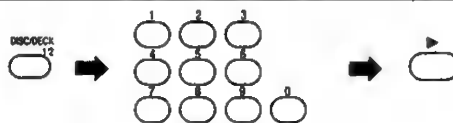
Point the remote control toward
the CD changer



To start play



To start play from the
desired disc



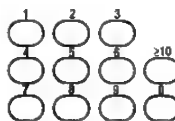
Select the disc number.
(When selecting discs, [≥10] does not respond to touch.)

For your reference



If you press this button instead of [▶] shown in the above procedure, the CD changer will stop and display the disc number. To start the disc, press [▶].

To start play from the
desired track



Select the track number.

(Example: Track 1)



(Example: Track 10)



To skip a track



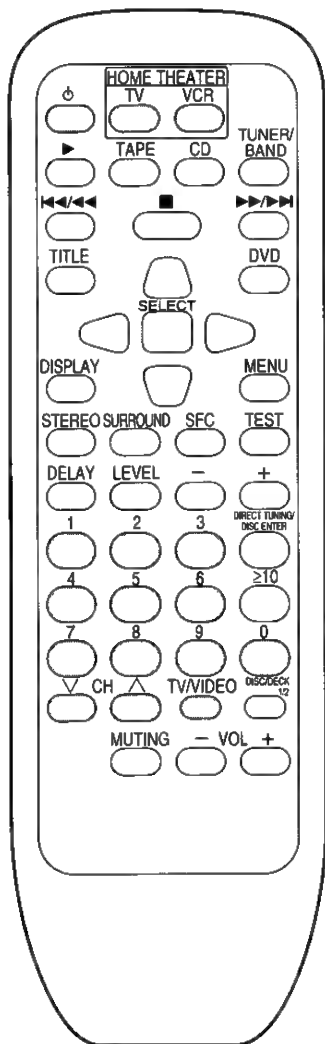
To stop play



To watch TV broadcasts

The procedure below are examples for when a TV and VCR are connected to the receiver as shown in this manual.

This remote control is designed for home theater system. If you press [TV] (or [VCR]) and [⏻] in succession, the TV (or VCR) and receiver will be turned on and the selector on the receiver will change to TV/DSS (or VCR). Press [⏻] within 3 seconds of pressing [TV] (or [VCR]).



To watch TV broadcasts

Point the remote control toward the TV and the receiver



Switch ON the TV and the receiver.

The receiver will switch the input source to TV/DSS.

Note

If you allow more than 3 seconds to pass between pressing [TV] and [⏻], only the TV will be operated.

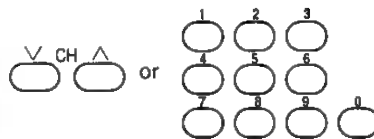
Do not use this remote control to turn the TV ON and OFF if you are not using the receiver.

Point the remote control toward the TV



Set the TV/VIDEO mode on the TV to "TV".

Point the remote control toward the TV



Select the desired channel.

To watch TV broadcasts with a VCR tuner

Point the remote control toward the TV and the receiver



Switch ON the TV and the receiver.

Point the remote control toward the VCR and the receiver

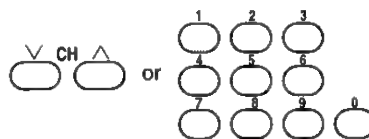


Switch ON the VCR.

The receiver will switch the input source to VCR.

Set the input selector on the VCR to the "TUNER" position

Point the remote control toward the VCR



Select the desired channel.

Point the remote control toward the TV



Set the TV/VIDEO mode on the TV to "VIDEO".

Note

If you allow more than 3 seconds to pass between pressing [VCR] and [⏻], only the VCR will be operated.

Do not use this remote control to turn the VCR ON and OFF if you are not using the receiver.

To switch OFF the TV



To switch OFF the VCR

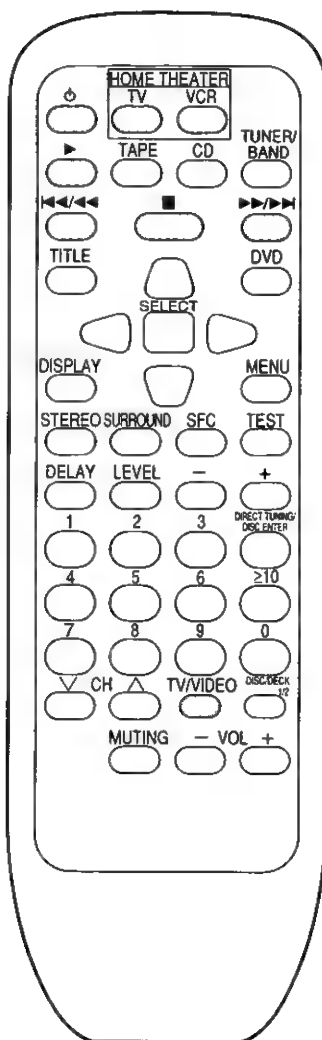


Note

Turn the receiver OFF last.

To watch video tapes

The procedure below are examples for when a TV and VCR are connected to the receiver as shown in this manual.



To watch video tapes

Point the remote control toward the TV and the receiver

TV → → → Switch ON the TV and the receiver.

Point the remote control toward the VCR player and the receiver

VCR → → → Switch ON the VCR player.

Point the remote control toward the TV

TV/VIDEO → → Set the TV/VIDEO mode on the TV to "VIDEO".

The receiver will switch the input source to VCR.

Point the remote control toward the VCR player

→ Playback will begin.

To fast-forward or rewind the video tape

In the stop mode

VCR → → →

To stop playback

VCR → →

To switch OFF the TV

TV → →

To switch OFF the VCR

VCR → →

Note

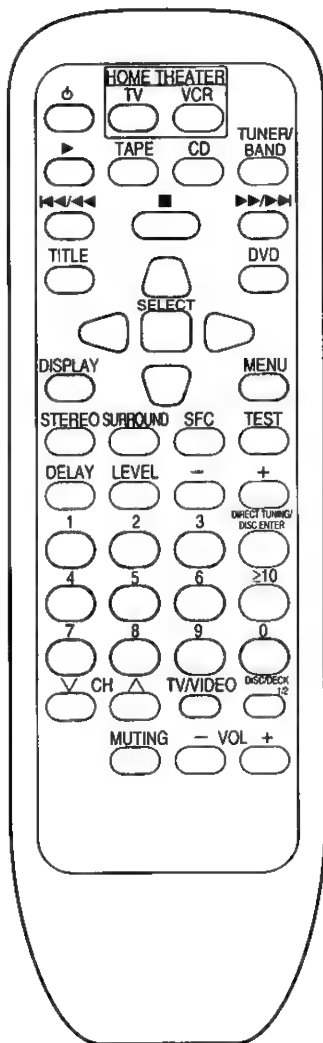
Turn the receiver OFF last.

To watch DVDs

The procedure below are examples for when a TV and DVD player are connected to the receiver as shown in this manual.

Make sure the remote control is in the DVD player operation mode. (⇒ Page 48.)

Actual operations depend on your equipment and software.



Point the remote control toward the TV and the receiver

TV → →
 Switch ON the TV and the receiver.

Point the remote control toward the DVD player and receiver

DVD → →
 Switch ON the DVD player.

Point the remote control toward the TV

TV/VIDEO
 Set the TV/VIDEO mode on the TV to "VIDEO".

Point the remote control toward the DVD player.

Play will begin.

To select the title

TITLE → → → → →
 Play will begin.

To use the DVD menu

MENU → → → → →
 Play will begin.

To clear the DVD menu

MENU

To use on-screen graphic controls
(Graphic user interfaces, GUI, are a feature of some DVD player's manual for details.)

DISPLAY → → → → →
 Play will begin.

To skip to the beginning of a track or chapter

To stop play

To switch OFF the TV

TV → →

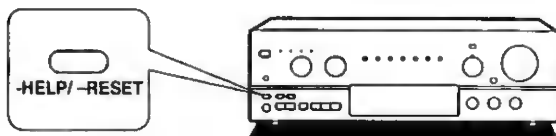
To switch OFF the DVD player

DVD → →

Note

Turn the receiver OFF last.

About the HELP function



For your reference

If the above button is pressed for 2 seconds or more until "RESET" appears on the display, the operation settings for the unit will be initialized to the settings made at the time of shipment.

However, any broadcasting stations which have been preset into memory will not be erased at this time.

If you make a mistake in operation or if sound output stops due to some operation which was performed, the HELP function displays information which can be useful for indicating the method by which this condition can be remedied.

If "ERROR" or scrolling characters (for instance, "SPEAKER OFF NOW") appear on the display during operation, carry out the following operation.

Press [-HELP/-RESET].

The method for remedying this situation will be displayed.

If -HELP starts flashing

The receiver is too hot. Press -HELP and the message "HIGH TEMP-REDUCE VOLUME" scrolls across the screen and the button stops flashing. Reduce the volume or turn the unit off to allow it to cool down. It is also possible that the temperature the receiver is being used in is too high. Reduce the ambient temperature if possible.

You can check whether the temperature has reduced by pressing -HELP again. If the temperature is still high, the error message will scroll across the screen again. When a normal temperature is reached the message "OPERATING CORRECTLY NOW" is displayed when the button is pressed.

Listening caution



Selecting fine audio equipment such as the unit you've just purchased is only the start of your musical enjoyment. Now it's time to consider how you can maximize the fun and excitement your equipment offers. This manufacturer and the Electronic Industries Association's Consumer Electronics Group want you to get the most out of your equipment by playing it at a safe level. One that lets the sound come through loud and clear without annoying blaring or distortion-and, most importantly, without affecting your sensitive hearing.

We recommend you to avoid prolonged exposure to excessive noise.

Sound can be deceiving. Over time your hearing "comfort level" adapts to higher volumes of sound. So what sounds "normal" can actually be loud and harmful to your hearing.

Guard against this by setting your equipment at a safe level BEFORE your hearing adapts.

To establish a safe level:

- Start your volume control at a low setting.
- Slowly increase the sound until you can hear it comfortably and clearly, and without distortion.

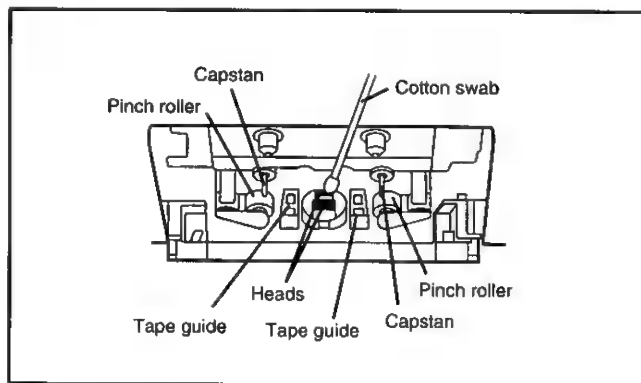
Once you have established a comfortable sound level:

- Set the dial and leave it there.

Taking a minute to do this now will help to prevent hearing damage or loss in the future. After all, we want you listening for a lifetime.

Maintenance

Head care (Only for cassette deck)



To assure good sound quality for recording and playback, be sure to clean the heads after approximately every 10 hours of use.

- 1) Press OPEN to open the cassette holder.
- 2) Switch off the power of the cassette deck.
- 3) Clean the heads, pinch roller, capstan shaft and the tape guide with a cotton swab (or with a soft, lint-free cloth) slightly moistened with isopropyl alcohol.

Do not use any solution other than alcohol for head cleaning.

If the surfaces are dirty

To clean this unit, wipe with a soft, dry cloth.

If the surfaces are extremely dirty, use a soft cloth dipped in a soap-and-water solution or a weak detergent solution.

- Never use alcohol, paint thinner or benzine to clean this unit.
- Before using chemically impregnated cloth, read the instructions that came with the cloth carefully.

Receiver SA-G78

■ AMPLIFIER SECTION

Rated minimum sine wave RMS power output
40 Hz–20 kHz both channel driven
0.8% total harmonic distortion

80 W per channel (8 Ω)

1 kHz continuous power output both channels driven

0.05% total harmonic distortion 83 W per channel (8 Ω)

Total harmonic distortion

rated power at 40 Hz–20 kHz 0.8% (8 Ω)

half power at 1 kHz 0.07% (8 Ω)

Power output at the Dolby Pro Logic operation

0.9% at 1 kHz,

Front 2×80 W (8 Ω)

Center 80 W (8 Ω)

Surround 2×80 W (8 Ω)

Low frequency damping factor

30 (8 Ω)

Load impedance

Front 8 Ω

Center 8 Ω

Surround 8 Ω

Frequency response

PHONO RIAA standard curve ±0.8 dB

CD, TAPE, DVD, VCR, TV/DSS 10 Hz–70 kHz, ±3 dB

Input sensitivity

PHONO 0.4 mV (3 mV, IHF'66)

CD, TAPE, DVD, VCR, TV/DSS 27 mV (200 mV, IHF'66)

S/N (IHF A)

PHONO 70 dB (78 dB, IHF'66)

CD, TAPE, DVD, VCR, TV/DSS 75 dB (83 dB, IHF'66)

Input impedance

PHONO 47 kΩ

CD, TAPE, DVD, VCR, TV/DSS 22 kΩ

Tone controls

BASS 50 Hz, +10 to –10 dB

TREBLE 20 kHz, +10 to –10 dB

Subwoofer frequency response

7 Hz–100 kHz, ±3 dB

■ FM TUNER SECTION

Frequency range

87.9–107.9 MHz

Sensitivity

11.2 dBf (2 μV, IHF'58)

50 dB quieting sensitivity

MONO 18.3 dBf (4.5 μV, IHF'58)

STEREO 38.3 dBf (45 μV, IHF'58)

Total harmonic distortion

MONO 0.2%

STEREO 0.3%

S/N

MONO 73 dB

STEREO 67 dB

Frequency response

20 Hz–15 kHz, +1 dB, –2 dB

Alternate channel selectivity

65 dB

Capture ratio

1.5 dB

Image rejection at 98 MHz

40 dB

Spurious response rejection at 98 MHz

75 dB

AM suppression

50 dB

Stereo separation

1 kHz 40 dB

10 kHz 30 dB

Antenna terminal

75 Ω (unbalanced)

■ AM TUNER SECTION

Frequency range

530–1710 kHz

Sensitivity

20 μV, 330 μV/m

Selectivity

55 dB

IF rejection at 1000 kHz

50 dB

■ VIDEO SECTION

Output voltage at 1 V input (unbalanced)

1±0.1 Vp-p

Maximum input voltage

1.5 Vp-p

Input/output impedance

75 Ω

■ GENERAL

Power supply

AC 120 V, 60 Hz

Power consumption

345 VA, 270 W

Dimensions (W×H×D)

430×130.7×320.6 mm (16-15/16"×5-5/32"×12-5/8")

Weight

8.5 kg (18.87 lb.)

Power consumption in standby mode 1 W

Notes:

- Specifications are subject to change without notice. Weight and dimensions are approximate.
- Total harmonic distortion is measured by the digital spectrum analyzer.

Cassette deck RS-TR180

■ CASSETTE DECK SECTION

Deck system

Stereo cassette deck

Track system

4 track, 2 channel

Recording system

AC bias

Bias frequency

80 kHz (approx.)

Erasing system

AC erase

Heads

DECK 1

Playback head (Permalloy)×1

DECK 2

Recording/Playback head (Permalloy)×1

Erasing head (Double-gap ferrite)×1

Motors

DECK 1

Capstan/Reel table drive (DC servo motor)×1

DECK 2

Capstan/Reel table drive (DC servo motor)×1

Tape speed

4.8 cm/s (1-7/8 ips)

Wow and flutter

0.18% (WRMS)

Fast forward and rewind times

Approx. 120 seconds with C-60 cassette tape

Frequency response (Dolby NR off)

TYPE I (NORMAL)

40 Hz–14 kHz, ±3 dB

20 Hz–17 kHz

TYPE II (HIGH POSITION)

40 Hz–14 kHz, ±3 dB

20 Hz–17 kHz

TYPE IV (METAL)

40 Hz–15 kHz, ±3 dB

20 Hz–18 kHz

S/N

(signal level=max recording level, HIGH POSITION type tape)

NR off

54 dB (A weighted)

Dolby B NR on

64 dB (A weighted)

Input sensitivity and impedance

REC (IN)

320 mV/47 kΩ

Output voltage and impedance

PLAY (OUT)

320 mV/500 Ω

■ GENERAL

Power supply

AC 120 V, 60 Hz

Power consumption

18 W

Dimensions (W×H×D)

430×131×286 mm

(16-15/16"×5-5/32"×11-1/4")

Weight

3.8 kg (8.5 lb.)

Note:

Specifications are subject to change without notice. Weight and dimensions are approximate.

Graphic equalizer SH-GE50

EQUALIZER SECTION

Frequency response (center position)	5 Hz-100 kHz, -3 dB
Maximum output voltage	6 V (1 kHz)
Output voltage	1 V
Total harmonic distortion	0.007% (20 Hz-20 kHz)
	0.005% (1 kHz)
Input sensitivity	1V
S/N	110 dB (IHF'A)
Maximum input voltage	6 V
Input impedance	33 kΩ
Gain	0±1 dB
Band level controls	+12 to -12 dB
	(7 continuously variable elements per channel)
Center frequencies	63 Hz, 160 Hz, 400 Hz, 1 kHz, 2.5 kHz, 6.3 kHz, 16 kHz

GENERAL

Power supply	AC 120 V, 60 Hz
Power consumption	8.5 W
Dimensions(W×H×D)	430×75×192.5 mm
	(16-15/16"×2-15/16"×7-19/32")
Weight	1.8 kg (3.95 lb.)

Notes:

1. Specifications are subject to change without notice.
Weight and dimensions are approximate.
2. Total harmonic distortion is measured by the digital spectrum analyzer.

CD changer SL-MC59

AUDIO

No. of channels	2 (left and right, stereo)
Frequency response	2-20,000 Hz, ±1 dB
Output voltage	2 V (at 0 dB)
Dynamic range	92 dB
S/N	100 dB
Total harmonic distortion	0.007% (1 kHz, 0 dB)
Wow and flutter	Below measurable limit
DA converter	MASH (1 bit)
Output impedance	Approx. 1 kΩ
Load impedance	More than 10 kΩ

PICKUP

Wavelength	780 nm
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GENERAL

Power supply	AC 120 V, 60 Hz
Power consumption	11 W
Dimensions (W×H×D)	430×170×387 mm
	(16-15/16"×6-11/16"×15-1/4")
Weight	6.3 kg (13.9 lb.)

Note:

Specifications are subject to change without notice.
Weight and dimensions are approximate.

Front speakers SB-A28

Type	3 way 3 speaker bass-reflex
Speaker(s)	
Woofer	30 cm (12") cone type
Midrange	10 cm (4") cone type
Tweeter	6.5 cm (2-9/16") cone type
Impedance	8 Ω
Input power	240 W (MUSIC)
	120 W (DIN)
Output sound pressure level	89 dB/W (1.0 m)
Crossover frequency	3 kHz, 6 kHz
Frequency response	35 Hz-35 kHz (-16 dB)
	43 Hz-31 kHz (-10 dB)
Dimensions (W×H×D)	380×900×285 mm
	(14-31/32"×35-7/16"×11-7/32")
Weight	12 kg (26.4 lb.)

Surround speakers SB-S948

Type	1 way 2 speaker Bass-reflex
Speaker(s)	
Full range	8 cm (3-5/32") corn type×2
Impedance	8 Ω
Input power	200 W (MUSIC)
	100 W (DIN)
Output sound pressure level	86 dB/W (1.0 m)
Frequency response	135 Hz-20 kHz (-16 dB)
	165 Hz-18 kHz (-10 dB)
Dimensions (W×H×D)	170×240×100 mm
	(6-11/16"×9-7/16"×3-15/16")
Weight	1.6 kg (3.53 lb.)

Center speaker SB-C938

Type	1 way 2 speaker bass-reflex
Speaker(s)	
Full range	8 cm (3-5/32") cone type×2
Impedance	8 Ω
Input power	220 W (MUSIC)
	110 W (DIN)
Output sound pressure level	87 dB/W (1.0 m)
Frequency response	130 Hz-20 kHz (-16 dB)
	170 Hz-18 kHz (-10 dB)
Dimensions (W×H×D)	320×130×100 mm
	(12-5/8"×5-1/8"×3-15/16")
Weight	1.7 kg (3.8 lb.)

Note:

Specifications are subject to change without notice.
Weight and dimensions are approximate.

Troubleshooting guide

Before requesting service for this unit, check the chart below for a possible cause of the problem you are experiencing. Some simple checks or a minor adjustment on your part may eliminate the problem and restore proper operation.

If you are in doubt about some of the check points, or if the remedies indicated in the chart do not solve the problem, refer to the directory of

authorized service centers (enclosed with this unit) to locate a convenient service center, or consult your dealer for instructions.

For detailed instructions, contact an authorized servicer at 1-800-211-7262 or web site (<http://www.panasonic.com>).

Reference pages indicated in black circle. (For example: ⑨)

Problem	Probable cause(s)	Suggested remedy
Common Problems		
No sound is heard when the power is switched ON.	The power cord plug is not completely inserted.	• Confirm that the power cord plug is connected completely.
	Connections are incomplete or incorrect to the speaker systems, etc.	• Check that all connections are correct.
	The speakers are off.	• Check that the speaker button is pressed. ⑬ ②② ③①
	The tape monitor function is on.	• Press the tape monitor button. ⑤⑥
	The input selector is set incorrectly.	• Set it to the correct position.
	The input selector of the graphic equalizer is not set to the "SOURCE" position.	• Set to the "SOURCE" position. ④⑤
When listening to stereo sound, the sound lacks depth (i.e. thin bass, tinny sound).	One of the speakers is connected out of phase [(+) → (-), (-) → (+)].	• Reconnect the speakers maintaining proper polarity [i.e., (+) → (+), (-) → (-)].
When listening to stereo sound, the left and right sounds are reversed.	The left and right speaker connections, or source connections, are reversed.	• Check all connections and correct them if necessary.
A low-pitched noise ("hum" or "buzz") is heard.	A power cord, fluorescent light, etc., is near the connection wires.	• Try separating this unit as far as possible from the electric appliance.
Sound is not heard from one of the speaker systems.	The speaker wires are disconnected.	• Check and correct the connections of the speaker wires.
	The balance control is set too far to one side.	• Set so that sounds are heard at the center, between the speaker systems. ⑤⑥
Sound stops during a performance, or no sound is heard when the power is switched ON. "OVERLOAD" appears on the display.	The volume level is excessively increased.	• Decrease the volume level.
	The protection circuitry has functioned because the positive and negative speaker connection wires are "shorted" or speaker systems with an impedance less than the indicated rated impedance of the receiver are used.	• Switch OFF the power, and, after determining and correcting the cause, switch ON the power once again. • Use a speaker system of the proper impedance rating.

While listening to radio broadcasts

A strange hissing noise is produced continuously or intermittently.	Caused by the "discharge phenomenon" and the "oscillation phenomenon" of electric appliances (such as fluorescent lights, TV, small series-type motors, rectification equipment, etc.).	<ul style="list-style-type: none"> • Try placing this unit farther away from such equipment. • Install noise-prevention equipment on this unit or on the electric appliance.
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While listening to AM broadcasts

An unusual "beat" sound is heard.	Unit is being used at the same time as the television set.	• Switch OFF the television set, or use this unit farther away from it.
A low-pitched "hum" sound is heard when the broadcast is tuned.	The AM loop antenna connection wires are too close to the power cord.	• Place the antenna connection wires and the power cord farther apart.
	The power supply frequency from the power cord is modulated and heard from the speakers.	• Install a special outdoor antenna. ①①

Reference pages indicated in black circles. (For example: ①)

Problem	Probable cause(s)	Suggested remedy
While listening to FM broadcasts		
An unusual hissing noise is heard when listening to the broadcast in stereo, but not heard when listening monaurally.	Due to the differences between a monaural and a stereo signal, a higher level of signal strength is required for proper stereo reception. If the signal level is low, a hissing noise may be produced on the stereo channel.	<ul style="list-style-type: none"> • Try reducing the treble sound by using the treble control of the receiver. • In this case, set for monaural reception to reduce the hiss. Note, however, that the broadcast will not be heard as stereo.
Noise is excessive in both stereo and monaural broadcasts.	Poor location and/or direction of the antenna. Transmitting station is too far away.	<ul style="list-style-type: none"> • Try changing the location, height and/or direction of the antenna. • If an indoor antenna is being used, change to an outdoor antenna. ① • Try using an antenna with more elements.
The FM stereo indicator or the quartz lock indicator flickers, without completely illuminating.	Poor location and/or direction of the antenna. Transmitting station is too far away.	<ul style="list-style-type: none"> • Try changing the location, height and/or direction of the antenna. • If an indoor antenna is being used, change to an outdoor antenna. ① • Try using an antenna with more elements.
Excessive distortion in the sound of stereo broadcasts.	Nearby building or mountain. [Multipath distortion is being caused by the mutual interference of broadcast signals received directly from the transmitting station (direct waves) and signals being reflected from nearby buildings or mountains (reflected waves).]	<ul style="list-style-type: none"> • Relocate the antenna and the connection wires to a place farther away from where automobiles pass.
Sound is distorted, "popping" noise is heard, and/or the volume level becomes low.	Broadcast signals are being disturbed by nearby automobile traffic or airplanes.	<ul style="list-style-type: none"> • Relocate the antenna and the connection wires to a place farther away from where automobiles pass.

While listening to compact discs		
Changer will not play.	A disc(s) or other foreign object(s) has fallen inside the changer. Moisture has collected in the changer.	<ul style="list-style-type: none"> • Open the front panel and remove the object. • Allow the changer to dry out for about one hour before using it.
The disc in the changer does not play.	The disc label is facing left. The disc is dirty. The disc is scratched. The disc is warped. The disc is not within specified standards.	<ul style="list-style-type: none"> • Set the disc with the label facing right. ⑫ • Wipe the disc with a soft cloth. ⑬ • Replace the disc with a new one.
Play stops before changing to the next disc.	The front panel is open.	<ul style="list-style-type: none"> • Close the panel.
A certain music passage can't be played correctly.	The disc is dirty. The disc is scratched.	<ul style="list-style-type: none"> • Wipe the disc with a soft cloth. ⑬ • Replace the disc with a new one.
There is noise from the tuner or disturbance on the TV screen.	Caused by high-frequency signals from this changer.	<ul style="list-style-type: none"> • Use the changer further away from the tuner or TV. • If the tuner or TV's antenna is the indoor type, use an outdoor one.
The error message "NO PGM" appears on the display, when program play is started.	Play was started without a track being programmed.	<ul style="list-style-type: none"> • Program a track. ⑭
The error message "ERROR" appears on the display, and the changer stops operating.	The mechanism of the changer has been improperly adjusted.	<ul style="list-style-type: none"> • Turn the unit off and then back on again.
The error message "F-26" appears on the display and the changer stops operating.	The servo LSI has malfunctioned.	<ul style="list-style-type: none"> • Unplug the changer from its outlet, replug it in and turn the changer ON again.
The error message "TAKE OUT" appears on the display and the changer stops operating.	A disc has been put in the slot of the disc in play. Because of light or noise, the changer has detected a disc in the slot of the disc being played, even though it is empty.	<ul style="list-style-type: none"> • Remove the disc whose number is displayed and press the stop button. • Check whether there is a disc in the displayed slot. With the front panel close, hold down ■ for at least 4 seconds.

Reference pages indicated in black circles. (For example: 59)

Problem	Probable cause(s)	Suggested remedy
While using the cassette deck		
Previously recorded sound has not been erased.	Erase head is dirty.	• Clean the head. 59
Sound output is hoarse or unsteady.	Heads are dirty.	• Clean the heads. 59
	Tape is damaged.	• Try operation with a new tape; if there is no problem with the new tape, discard the damaged tape.
Poor sound quality (especially in the high treble and low bass ranges).	The Dolby noise-reduction function is off.	• Press DOLBY NR button. 41
Sound is low, poor tone, intermittent sound, noise.	Heads, capstan and/or pinch roller are dirty.	• Clean the heads, capstan and/or pinch roller. 59
	Tape is damaged.	• Try operation with a new tape.
There is a lot of noise, and the treble is drowned out.	The heads have been magnetized.	• Demagnetize the heads with a commercially sold magnetic eraser.
Recording is not possible.	One of the tape-to-tape recording-speed indicators is illuminated.	Switch off whichever tape-to-tape recording-speed indicator is illuminated (by pressing the SPEED button). 33
Recorded sound is TV noise.	This unit is placed near a TV.	• Try placing this unit farther away from a TV.

While using the digital sound processor or the graphic equalizer		
Equalized sound can't be heard.	The power switch is switched "OFF".	• Switch "ON" the power.

While using the remote control transmitter		
Remote control transmitter does not function.	Batteries are incorrectly installed.	• Insert the batteries so that the positive (+) and negative (-) polarities are correct. 15
	The remote control transmitter batteries are drained.	• Replace them with new batteries.
	There is an obstruction between the remote control transmitter and the system components.	• Remove the obstruction.
	The remote control transmitter is not correctly facing the system components.	• Face the remote control transmitter correctly toward the system components. 15

Product service

Do not attempt to remove the cover(s) or repair the unit yourself. Refer servicing to qualified personnel only.

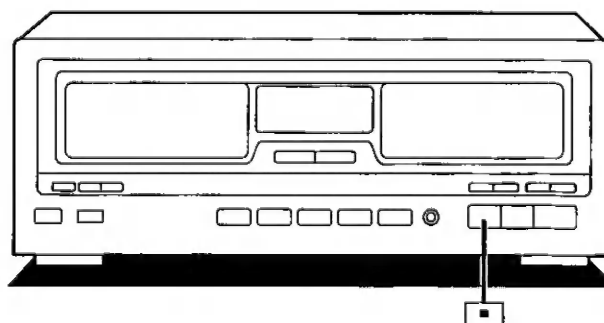
Product information

For product service, product information or assistance in product operation, refer to the servicer directory.

When getting service

Before bringing in your changer for service, be sure to remove all discs.

If the disc in play doesn't return to its slot when you press ■, hold the button down for about 4 seconds. The disc should return to the slot.



It should be easier for you to remember what disc is in what slot and the group(s) it's in if you record everything in this table.

No.	GROUP					DISC NAME
0	SINGLE					
1	A	B	C	D	E	
2	A	B	C	D	E	
3	A	B	C	D	E	
4	A	B	C	D	E	
5	A	B	C	D	E	
6	A	B	C	D	E	
7	A	B	C	D	E	
8	A	B	C	D	E	
9	A	B	C	D	E	
10	A	B	C	D	E	
11	A	B	C	D	E	
12	A	B	C	D	E	
13	A	B	C	D	E	
14	A	B	C	D	E	
15	A	B	C	D	E	
16	A	B	C	D	E	
17	A	B	C	D	E	
18	A	B	C	D	E	
19	A	B	C	D	E	
20	A	B	C	D	E	
21	A	B	C	D	E	
22	A	B	C	D	E	
23	A	B	C	D	E	
24	A	B	C	D	E	
25	A	B	C	D	E	
26	A	B	C	D	E	
27	A	B	C	D	E	
28	A	B	C	D	E	
29	A	B	C	D	E	
30	A	B	C	D	E	

No.	GROUP					DISC NAME
31	A	B	C	D	E	
32	A	B	C	D	E	
33	A	B	C	D	E	
34	A	B	C	D	E	
35	A	B	C	D	E	
36	A	B	C	D	E	
37	A	B	C	D	E	
38	A	B	C	D	E	
39	A	B	C	D	E	
40	A	B	C	D	E	
41	A	B	C	D	E	
42	A	B	C	D	E	
43	A	B	C	D	E	
44	A	B	C	D	E	
45	A	B	C	D	E	
46	A	B	C	D	E	
47	A	B	C	D	E	
48	A	B	C	D	E	
49	A	B	C	D	E	
50	A	B	C	D	E	
51	A	B	C	D	E	
52	A	B	C	D	E	
53	A	B	C	D	E	
54	A	B	C	D	E	
55	A	B	C	D	E	
56	A	B	C	D	E	
57	A	B	C	D	E	
58	A	B	C	D	E	
59	A	B	C	D	E	
60	A	B	C	D	E	

Write your group names in here.

GROUP	GROUP NAME
A	
B	
C	
D	
E	